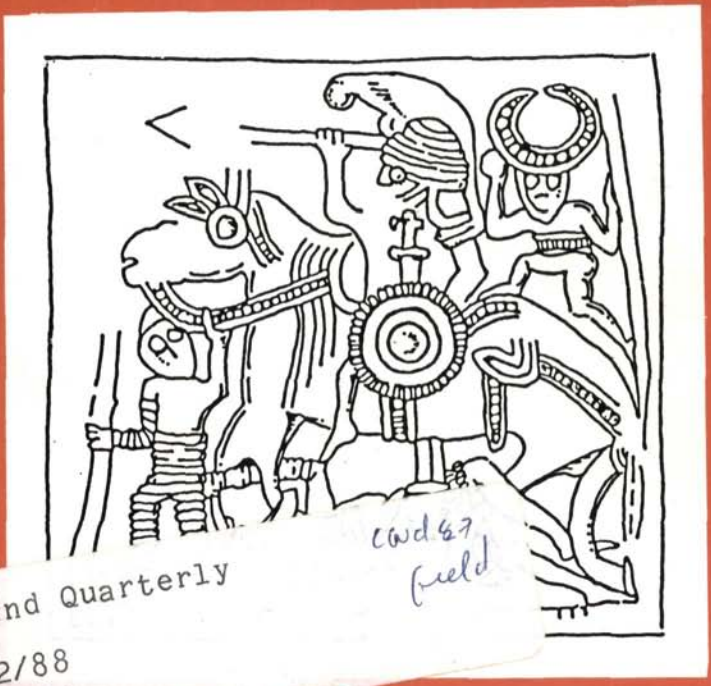
THE MANKIND QUARTERLY



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Birth Defects: Original Article Series · Volume XV, Number 6

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DERMATOGLYPHICS – 50 YEARS LATER

Wladimir Wertelecki and Chris C. Plato, Editors

Fingerprints, first a medical curiosity, then a means of identification, began to attract the interest of anthropologists in the 1920s. It was then that Cummins and Midlo, coining the term "dermatoglyphics," laid the groundwork for its use by social scientists. More recently, biomedical researchers have been drawn to dermatoglyphics because of the unique status of finger and palm prints as genetic and developmental markers. The current breadth of interest in this science has created a need for communication among researchers who use print data in their individual disciplines.

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Wladimir Wertelecki and Chris C. Plato, Editors
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NORTHWEST HISPANIA CA. 1200 B.C. TO 19 B.C.

TERENCE H. WILBUR
University of California, Los Angeles

The author surveys the former extent of Pyrenean culture, and its persistence despite subsequent Celtic and Roman intrusions.

The Iberian Peninsula plays an important and somewhat mysterious role in the Indo-Europeanization of Western Europe. The most enigmatic part of the Peninsula is the northwest. The first historical account of this portion of pre-Roman Hispania is to be found in the geographical descriptions of Rufus Festus Avienus' *Ora Maritima,* which we know only from Pisani's printing of 1488 (Schmoll 1959: 10-11, 15-16):

> Cempsi atque Saefes arduos collis habent,
> Orphiusse in agro; propter hos pernix Ligus
> Draganum proles sub niviso maxime
> Septentrionak conlocaverant larem.

The country Orphiussa extended from the southern portion of modern Portugal northward along the sea-coast of northwestern Spain and then eastward along the Cantabrian coast to the Western Pyrenees. According to Avienus, this land was formerly called *Oestrymnis.* However, the inhabitants of this land were driven out by a multitude of poisonous serpents. This depopulated country was then given the name *Orphiussa,* a Greek word that means 'full of snakes'. Later this empty land was repopulated by the Cempsi, Saefes, Pernix Ligus, and the Draganum Proles. This curious mixture of fact and fancy was extracted by Avienus, who lived in the fourth century A.D., from an account written by a Massiliot sailor of the name Himilco, who can be dated no later than 650 B.C. In other classical and late classical geographical and historical accounts, *Oestrymnis* is a name applied to the entire Atlantic coast-line of modern Portugal, Spain, and France. This paper is concerned with the peoples that lived *maxime septentrionale sub niviso,* in Galicia, Asturias, Cantabria, and all of what is now known as the Basque Country, north and south.

The primary means that we employ to account for an enormous amount of factual material is to construct an explanatory narrative, that sort of hypothesis appropriate to historical

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studies. The facts to be explained by an historical narrative are all too often of a heterogeneous, disparate nature: ceramic objects, burial grounds and their contents, coins, all the many objects of everyday, wartime, and ceremonial life that have by chance survived. In the case of Northwest Hispania, the physical kinds of evidence are eked out by the kinds of documentation we find in the geographical, ethnological, and historical accounts of the Greek and Roman geographers and historians as well as a few poets of the last three centuries of the pre-Christian era and of the first four centuries of the Christian era. The soil of the Hispanic Peninsula is over-crowded with the remnants of its past, which extends from the first appearance of human beings in Europe right down to modern times. The peculiar geology of the northern reaches of Spain and the south-western stretches of France have preserved for us spectacular evidence for the periods usually designated as Paleolithic, Mesolithic, and Neolithic. This region of Western Europe has from the beginnings of the modern study of prehistory been subject to the closest scrutiny. The plot becomes harder to discern when we reach the Bronze Age and the Iron Age in Northwestern Hispania because the essential facts seem to become scantier.

The narrative constructed early in the 19th century to explain the historical findings on the Peninsula for the millenium and a half before the Roman conquest was a simplifying one. It was based upon the hypothesis that, before the Carthaginians, the Greeks, and finally the Romans vied with each other for possession of the wealth of Hispania, the language and culture of the entire peninsula was Iberian and that the living survival of the Iberian language was Basque, which continued, perversely, to be spoken in the Western Pyrenees and the immediately contiguous regions. This opinion had the tremendous authority of Wilhelm von Humboldt behind it. Von Humbolt expressed it first with great eloquence in his *Prüfung der Untersuchungen über die Urbewohner Hispaniens vermittelst der vaskischen Sprache* of 1821 (Schmoll 1959: 1). This language was, of course, non-Indo-European. Such was the force of this proposed scenario that Hugo Schuchardt could, in all good conscience, write and publish his *Die iberische Deklination* almost a century later in 1907. In this study he proposed to find evidence for the declension of Iberian nouns in a number of heterogeneous

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epigraphic and numismatic materials. This declension matched mirabile dictu that of the declension of modern Basque nouns. However, the notion that Iberian forms represent direct evidence of a homogeneous language throughout Hispania of which Basque is a direct descendent was so fixed that he had no qualms. This unexamined assumption makes Hüber's *Monumenta Linguae Ibericae* of 1893 useful only to thoroughly trained investigators.

During the course of the 19th century, evidence accumulated that began to cast more and more doubt upon the simplifying Iberian hypothesis. This hypothesis, of course, excluded for all practical purposes the Peninsula from the process of Indo-Europeanization of Western Europe. The real turning point in the interpretation of the prehistory of the Peninsula came with Manuel Gomez Moreno's brilliant breaking of the Iberian alphabet during the years of 1922-25 (1949 Miscelaneas, 2nd ed.; MacKendrick 1969: 67-70; Julio Caro Baroja 1954: 677). By making use of numismatic materials with an auxiliary knowledge of the well-recorded name of cities and districts and, also, of the epigraphic materials in the Punic, Greek, and Roman alphabets, Gomez Moreno demonstrated that the Iberian alphabet was a semi-alphabet or, if you will, a semi-syllabary. It appears that an original Hispanic adaptation of the very well-known syllabaries of the Eastern Mediterranean evolved in the southermost regions of the Peninsula and spread northward over the Peninsula. It was used not only for the languages of Tartessus and of the Iberians proper on the Spanish Levant, but also for some languages that had begun to look more and more Indo-European.

The origin of the Iberian semi-alphabet and its spread over the Peninsula is, of course, a fascinating question in itself. Although the peoples living in the South and on the Spanish Levant had early contact with the pure alphabets of the Carthaginians and the Greeks and occasionally made use of them, in the interior the Iberian characters were used even for languages for which it was not designed and for which it showed a very bad fit. The most striking feature of this semi-alphabet is the fact that the syllabic symbols indicate only those syllables that are composed of *stop plus vowel.* The other classes of consonants as well as the vowels themselves are represented by unique alphabetic symbols. This semi-alphabet was developed

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for a language or languages with only one series of stops, which series was most likely voiceless and lenis (Schmoll 1959: 2, ftnt. 5). Such an alphabet would be ill-suited for languages of the Indo-European type with at least two series of stops, voiced and voiceless, and even for Basque, which historically preserves the distinction, voiced-voiceless, only medially and, secondarily in modern Basque, initially. Nevertheless, even with more suitable alphabets at their disposal the non-Iberian inhabitants of the Peninsula adhered to the use of the local product. This speaks for the overwhelming influence of Iberian civilization.

Gomez Moreno's discovery showed that the Peninsula was not at all unified linguistically and, which is more, that it fell rather neatly into four distinct regions: the Tartessian south, the Iberian east, the Celt-Iberian center, and the analphabetic northwest. To be very specific, the northwest includes Galicia, Asturias, Cantabria, and the Basque Country in its entirely. It soon became clear that the northwest, the center, and many portions of the south and southwest of the Peninsula had been occupied by Indo-European peoples at a much earlier date that had been hitherto suspected (Schmoll 1959: 19).

The peoples that provide us with the least amount of linguistic material by means of epigraphic and numismatic sources are those of the northwest. This is also the region that offered the stiffest resistance to Roman domination. While the Levant and the Tartessian south fell relatively quickly into Roman ways and adopted Latin early, the strange and barbarian peoples in the northwest held out against Rome with unexampled stubbornness and courage. It would seem most likely that the already romanized east and south submitted so easily to Roman domination in order to gain protection from the barbarians in the northwest and in the center. The Roman conquest of Hispania began in 218 B.C. and ended only in 19 B.C. It took the crack Roman army two hundred years to incorporate Hispania into the Empire while Caesar and his armies required only some ten years to swallow up all of Gaul. It was the inhabitants of Galicia, Asturias, and Cantabria that gave the Romans the greatest amount of trouble. The end of an independent northwest really signals its entrance into written history. Of all the smaller stories in the drama of the Roman conquest, two stand out as being particularly significant: the fall of Numantia and the obliteration of the Cantabrians. These campaigns cost the Romans dearly.

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The Roman assault upon the Celt-Iberians of Numantia began about 153 B.C. Numantia was a small city on the Celt-Iberian meseta in Old Castile. It was located in a region that, even in those days, was impoverished in natural resources. The inhabitants of the city numbered at most 10,000, of which perhaps 6,000 were women and children. There were at most 4,000 able-bodied fighting men. Yet they held out against ten years of war and against one whole year of an elaborate Roman siege, directed by Scipio the Younger – who in 146 B.C. commanded the destruction of Carthage – and carried out with utter ruthlessness. To us it seems almost senseless that the might of Rome should be marshalled against this backwater town. This less than admirable page in Roman history cost the Empire more than 65,000 citizen-soldiers in the course of some ten years (MacKendrick 1969: 99-120). Why the total conquest of this city was such an exceedingly important item in imperial policy is hard for us to comprehend.

The people of Cantabria and Asturias in the north provided the final act for this bloody drama when they attempted to resist incorporation into the Empire during the first century B.C. Just as in the case of the Numantians, the resistance to Rome conquest was ferocious The Cantabrians often killed themselves rather than allowing themselves to be taken prisoner. The accounts of this war and of those of the end of Numantia (Gonzales Echegaray 1966). The Romans only finished the battle in 19 B.C.

It is indeed remarkable that the Romans never tried to conquer the Basques to the northeast of the Cantabrians and even later they made no attempt to conquer them when Roman rule was firmly established to the north of the Basques in Aquitania.

The peoples of the northwest occupied a land that was covered mainly by rugged and precipitous mountains with a narrow coastal plain. Unlike other nations under these conditions, they did not turn to the sea for subsistence or for trade. They resorted rather to old-fashioned plundering expeditions against their more prosperous neighbors on the richer parts of the meseta. Their agriculture remained limited and their herding of such animals as sheep, goats, and cattle remained just as limited. Their horses, however, were famous. Since this meager production did not suffice, they lived on a war-time basis, ever ready to steal from their neighbors. The Roman excuse for their obliteration now becomes comprehensible. They were a

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constant threat to the Pax Romana (Schulten 1962: 47-64).

These peoples of the northwest stood in sharp contrast to the cultivated and sophisticated nations of the south and of the east. Strabo reports to us that one culture prevailed on the north coast of the Peninsula, from the Basques of the Western Pyrenees to the tip of the Peninsula in Galicia (Caro Baroja 1943). These northern groups did not differ too much from the Celt-Iberians of the meseta to the east and to the south. The latter had absorbed more of the civilized techniques of the Iberians and had, with an infinitely more advanced agriculture, also made steps toward the development of an urban culture. The totality of the archaeological evidence as well as the testimony of the classical texts indicates that as we move north from the south and east the degree of influence of the advanced culture of the eastern territories drops off degree by degree. The Celt-Iberian territory represented a frontier between the civilized east and south and the wild northern territories (Knapp 1979: 415-472).

What brought the various intrusive racial and cultural groups onto the Peninsula during the second millennium B.C. and in the first half of the first millennium B.C. was to all appearances the abundance of metals scattered over the expanse of the Peninsula. The Hispania we are interested in is the product of the Bronze and early Iron Ages. The megalithic culture of the third and second millennia B.C. of the coastal regions and of the south slope of the Pyrenees was displaced from two directions (Tovar 1982: 13). In the north, copper and bronze technology was introduced by peoples from the south and southeast by a two-pronged approach: from the east up the basin of the Ebro and, in a longer move, up the coast of Portugal to Galicia and then eastward along the north coast to Navarre. The copper of Navarre first brought these people with metal technology north. Later on it was the iron of Cantabria and the tin of Galicia. At this time there is evidence for an earlier Bronze age culture with a more advanced agriculture living alongside a less advanced neolithic hunting-gathering society in the north and in the neighboring parts of the meseta. This is revealed to us by the ceramic finds primarily (Wilbur 1980: 8). This symbiosis was broken up by the first Indo-European incursions. These first Indo-European have been variously identified as Ligurians, Illyrians, pre-Celtic and para-Celtic tribes. Their shadowy

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existence left its traces mainly in the northwest tip of the Peninsula in the form of toponyms and hydronyms (Schmoll 1959: 93, 107-119). The linguistic evidence is scanty, but persuasive. We must imagine a world where communities that differed linguistically and culturally live side by side. The already urbanized culture of the south and east stood in contrast to the clan and village culture of the north and west. In the south, in Baetia, and in the southwest, both kinds of social, political, and economic organizations lived in close proximity. We must put aside our modern preconceptions of political territoriality. At this time there was still enough room for such variety. On the Levant, with its very distinct Carthaginian and Greek enclaves, we find a much more uniform appearance in contrast to the frontier and backwoods conditions of the northern meseta and the mountains that rise up before the coast of the north.

It is a curious fact that in the linguistic sense we know more about the peoples intruding upon the Peninsula from the north than we do about the advanced cultures to the south. We do know that they did not speak an Indo-European language. For that we have a more than adequate amount of epigraphic material. We do not know whether these Iberians and Tartessians were immigrants from somewhere in the Mediterranean east, from somewhere in North Africa, or were an autochthonous people who had learned early from smaller groups of settlers and metal hunters from the east Mediterranean. As we know from the Bible, Tarshish near the Gates of Hercules was renowned for its wealth and influence in the early part of the first millennium B.C. Both the Greeks and the Carthaginians had established trading posts and prosperous cities on the east and south coasts of the Peninsula, vying with each other not only for trade, but the establishment of their own political hegemonies. The Peninsula played an indispensible role in Hannibal's war against Rome, a fact that almost inevitably led to the Roman Conquest. The linguistic remains of the Iberian and Tartessian civilizations will remain mute and moot until we may by some lucky chance find the key to the languages (Arribas 1968: 87-96). Only then will we be able to make statements about near or distant linguistic relationships. It would appear at this time as if both of these groups spoke an indigenous rather than imported language. It is important for us to realize that this portion of the Peninsula had at the last

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quarter of the second millennium B.C. advanced to an urbanized, technologically sophisticated East-Mediterranean type civilization. At this time the Celtic peoples from central Europe began their intrusion into the north, into Pyrenean cultural space, into Iberian cultural space, and into the remains of the intertwined neolithic and bronze-age cultures of the northern meseta.

Pyrenean cultural space at this early period had a much further extension west to east than we would suspect from the shape of the Basque Country today. Strabo's description leads us to believe what has been confirmed by the archaeological evidence: The Pyrenees extended not from the mouth of the Bidassoa to the Mediterranean shores of Catalonia, but from the tip of Galicia thither. The opinion of the ancient geographers that the Pyrenees and the Cantabrian range formed a single geographic entity is supported by the cultural evidence. We may also assume that along this range of mountains a language was spoken that might well be described as proto-Basque or Bascoid in character (Wilbur 1980: 10-12). The integrity of this territory was broken by the encroaching Indo-Europeans. The tip of Galicia fell victim first. Ethnological material indicates that what took place in the northwest was an amalgamation of the entering Celtic tribes and the indigenous bascoid Pyrenean types. The Celts in Catalonia, impinging upon Iberian territory, remained quite separate as did the Celt-Iberians of the meseta. This process of amalgamation in the west took place about the beginning of the first millennium and, according to appearances, rather rapidly. The other Celts held their own, absorbing Iberian and Tartessian culture. We must assume that the earliest Indo-European Celts brought with them bronze technology, equestrian culture, and wheat-based agriculture, supplemented by pastoralism. There was a strange reaction, particularly in the west. The matriarchal, agricultural structure of the Pyrenean culture – Old European in Marija Gimbutas' terms – was not replaced by the patriarchal culture of the invading Indo-Europeans (Gimbutas 1973: 1-20). It was absorbed. What came out of this mixture in the northwest was a Celto-Pyrenean culture inferior in attainments to the Celt-Iberians immediately to the east and south. The influence of the advanced Iberian culture of the Levant upon the central Celt-Iberians is quite evident from the materials available.

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The interpretation of the Celtic linguistic evidence – numismatic and longer epigraphic remains such as the Bronze of Botorrita – is a subject of great debate (De Hoz y Michelena 1974; Folliot 1979). Just which Celts moved onto the Peninsula and when is the subject of an even more heated debate. There are as many points of view as there are workers in the field. A few facts remain firm: there is no evidence for La Tène culture on the Peninsula. The ceramic evidence of the Urnfield and Bell-Beaker cultures is just too disputed to take account of in this short paper. Linguistically speaking, there is no evidence in any of the epigraphic materials on the Peninsula for p-Celtic. Therefore, we can assume, as Folliot has very ably demonstrated, that the Celtic for which we have reliable evidence is too near to proto-Celtic for the later division into p-Celtic and q-Celtic to have made itself evident (Folliot 1979). The evidence for p-Celtic dative and locative plural in *-bo* is so slight that we can only consider it evidence for dialect variety in proto-Celtic (Schmoll 1959: 119). Peninsular Celtic was on its way to becoming a separate branch of Celtic before it was wiped out, along with the non-Indo-European languages of the Peninsula, by the Roman Conquest. Therefore, I would hazard the guess that the Celtic materials from the Peninsula are of a much more archaic nature than previously suspected. We must dare to state an absolute data: ca. 1,200 to 1,000 B.C. This would place the earliest Indo-European infiltrations perhaps in the middle of the second millennium B.C. This opinion is far more radical than that of Antonio Tovar, who conservatively places the first incursions no earlier than the eighth century B.C. (Tovar 1982: 22-23). Nevertheless, the displacement of Old European culture was never complete.

The most intriguing question remains: How did Basque manage to resist Iberianization, Celticization, and finally Romanization? The western portion of Pyrenean culture, i.e. Galicia, Asturias, Cantabria, early fell victim to Celticization and then Romanization. To speak of the "isolation" of the Basques is an absurdity. The Basque County before its expansion into Guipuzcoa and Biscaya in the first part of the first millennium A.D. straddled the major routes between the continent proper and the Peninsula. From the beginning the highways for migratory tribes, traders, armies and pilgrims passed through the Basque mountains and the littoral. I shall

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at this point hazard not an explanation, but a description. The Basque Country remained "porous." It resembled a sieve through which water passes while the sieve itself remains unaffected. The Romans, out of fear or indifference, made no attempt to incorporate the Basques into the Empire, leaving these strange inhabitants of the Western Pyrenees free of overwhelming commercial and political pressure. It was an act of continued passive resistance whose success is unique in history. All attempts in modern times by French and Spanish oppression to suppress the language have failed. It remains to be seen whether the recent fashioning of Basque into a language of modern administration will continue to protect Basque against attacks from the political and economic centers of Paris and Madrid.

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P.R. SEN GUPTA
Society for Environmental Archaeology, India

This study deals with the scientific reconstruction of archaeological evidence of the protohistoric period of the Indian sub-continent. It reveals, how crustral deformation and structural adjustment of rocks, sediments, etc. during Recent and historic times, brought about a change in the environmental syndrome of the Indo-Gangetic Plain and coastal regions of India. The global climatic conditions were not the responsible entity for this regional change. The study calls for a revision of the chronology to the Vedic and Epic Age and of the entire Harappan complex, in the light of geomorphological and palynological evidence.

Controversy still persists regarding the origin of the Harappan Civilization, the age of the 'Vedas' and the historicity and chronology of the epics. One of the basic tenets has until now been the widespread assumption that "from the recent changes in the delta of the Ganges and from historical data it has been argued that practically the whole Ganges Valley was probably uninhabitable 5,000 years ago, and that the extension of human settlements eastwards from Punjab has been a very slow and gradual process" (Ferguson in Pascoe, 1973).

However, this opinion must now be revised on the basis of evidence arising from:

i. the discovery of the remains of a Pleistocene hominid from 'Karim Khan' in the Yamuna Basin (Kennedy, 1980),

ii. excavations at 'Sarai Nahar Rai' District Pratapgarh, U.P., yielding skeletons of Late Stone Age Man (IAR, 1969-70),

iii. Holocene palynology from a meander-lake of the Ganga Valley, indicating recognition of cereal pollen before 4,500 years b.p. (Gupta, 1978),

iv. the pollen sequence from a lake in Rajasthan indicating burning of vegetation and cultivation of *Cerealia-type* pollen ca. 9,500 years b.p., and its continuation till 5,000 years b.p. in that region (Singh, et. al., 1974), and

v. the world's earliest record of rice cultivation from 'Koldihwa', District Allahabad (IAR, 1975-76 and IAR, 1976-77).

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Another widespread assumption which must now be challenged is that on the basis of the excavations of sites associated with the two Indo-Aryan epics, the cultural age of the *Mahabharata* epoch does not predate 1200 B.C., and that of the *Ramayana* may be restricted to 700 B.C. at the earliest. However, traditions hold that the *Ramayana* epoch preceded the *Mahabharata* war, which has been dated by some as early as 5,000 years b.p. Recent geomorphological evidence suggests that the social memory of *Mahapralaya* natural 'upheavals' on the Indian sub-continent cannot be ruled out altogether. Furthermore, recent C_{14} analysis of a charcoal sample No. PLR-325 from the Painted Grey Ware deposits of the excavated site of Ganwaria, District Basti, U.P., yielding a date 4740± 110 years b.p. (IAR, 1977-78), has created problems for the chronology of the entire Harappan complex. Presently radiocarbon dating and cultural parallels between the Indus culture and that of Mesopotamia have led scholars to suggest a time span for the Harappan culture from about 2,300 to about 1,750 B.C., but it has been argued that on the basis of the Three Age System, applicable to the Old World, the dating of this particular pottery, which has been equated with the Iron Age Culture of the Aryans, would push back the Vedic Age and the Copper and Bronze Age Cultures of the Harappans to possibly four to five millennia B.C.! Any evidence that can be obtained from geomorphological research can surely be of value in helping clarify these contradictions.

In addition to these, there are other problems too, such as the nebulous state of the Late Harappan complex, the indistinction relationship of Ochre Colored Pottery and the Copper Hoard Cultures of the Gangetic Valley, and the absence of Neolithic habitational layers beneath the Chacolithic sites of the Indic-Gangetic Plain. All these problems call for a scientific reconstruction of archaeological evidence relating to the Chalcolithic period in the context to the geo-environment of the Indian sub-continent during Post-Pleistocene times.

Environment and geology are closely related. Environment, as the space surrounding man, embraces air, water, climate, soil, flora and fauna. Man has no separate existence independent of his environment. He enjoys the benefits of nature by forming a part of an ecological system in close relation with the other components. A balance in the equilibrium of the dynamic en-

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vironment depends upon the mutual interactions of these components, whereby the processes of degeneration are counterbalanced by the processes of regeneration. Slight changes in the components tend to create disturbances in the delicate equilibrium of the geo-environment. At a given time a particular environment may largely be regarded as the effect and geologic processes as the cause. As such, the geological aspects of the environment play a significant role in 'Environmental Archaeology' (Zeuner, 1963). The significance of geological research for environmental archaeology is two-fold. Firstly, it can provide information about the climatic conditions in which man in the past lived and worked, and secondly, it can contribute to the construction of a tentative chronology.

Change in the Environmental Syndrome

During the Middle-Upper Pleistocene times, the cycles of erosion and aggradation of the rivers associated with global climatic fluctuations were very slow and gradual, leading to the formation of river terraces. Cut-and-fill terraces were formed by the larger rivers of the Indus and the Ganges Systems, when these encroached upon the Older alluvium landform. In the Post-Pleistocene times, both erosional and aggradational processes of these rivers became very rapid, following each other in quick succession. Global climatic conditons were not responsible for these regional variations.

The National Academy of Sciences, USA, records: "The period from 7,000-5,000 yaars ago was marked by temperatures warmer than those which prevail today. The last 5,000 years is characterised by generally declining temperatures and a trend towards more extensive glaciation (but not ice-sheets) in all parts of the world" (NAS, 1976). In the mid-Asian continent the warmest period occurred at about 8,000-9,000 years before present (Beltzner, 1976). A similar trend in temperature at about 5,500 years b.p., has been recorded by the Australian Academy of Sciences. The Australian data indicate 2,000 year period cycles of cooling alternating with warm periods over the last 6,000 years (A.A.S. 1976). Similar data for the tropical countries, where the cycles of glaciation and inter-glaciation are correllated to arid and humid environment, are not available, but we do find considerable geomorphological, palynologi-

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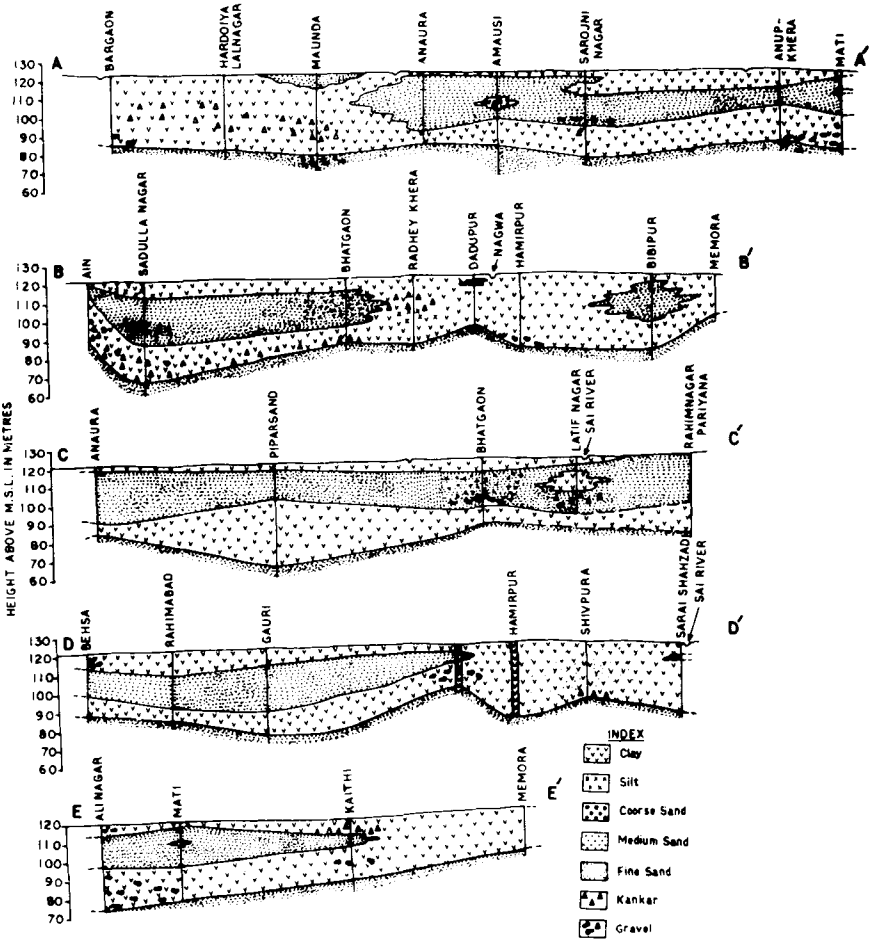
GEOLOGICAL CROSS SECTIONS ALONG A-A', B-B', C-C', D-D' & E-E'



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cal and archaeological evidence for the period under reference, viz.:

a. the geological cross-section profile of different lithological horizons of the sub-surfaces of the Sai Basin of Lucknow District (Fig. 1), denoting regional sub-surface disposition of the Quaternary sediments within an average of 50 meters below ground level, and deposition of the fluvial sediments consisting of the Older alluvium (Fig. 2),

b. the Holocene palynology from a meander-lake of the Ganga Basin, close to the Late Stone Age site of Sarai Nahar Rai, District Pratapgarh, U.P., documenting four brief phases of vegetational development, directly reflecting four brief periods of climatic changes, such as Very Arid, Arid, Semi-Arid and Semi-Humid in ascending order during the last 8,000 years, Fig. 3 (Gupta, 1978),

c. the lithofacies of the said pollen diagram, indicating corresponding conditions of arid environment at about 6,000 years b.p., and since then prevalence of periodic inundations, water-logging and immigration of grass pollen of 60 microns in this region (Vishnu Mittre, 1979),

d. the interpretation of Landsat Imagery of the western part of Rajasthan (Fig. 4), revealing the abandoned channels of the might *Rig-vedic* river Saraswati, their contribution to the alluviation and the sub-surface water which is mostly fed by Himalaya precipitation, flowing subterraneously through these water channels (Ghose, et. al., 1979),

e. the field study of Central Arid Zone Research Instititute of ICAR at Jodhpur, referring to water in the riverine materials at a depth of 30-40 meters below the ground-level in the wells along the lost courses of the river Saraswati, indicating regional sub-surface disposition of Quaternary sediments in western Rajasthan (Ghose, et. al., 1979),

f. the Aerial Survey around the Harappan port of Lothal by Central Arid Zone Research Institute of ICAR at Jodhpur, indicating changes in the patterns of drainage responsible for the cutting off of the dockyard from water-channels and eventually from access to the sea,

g. the location of Pre-Harappan and Harappan sites

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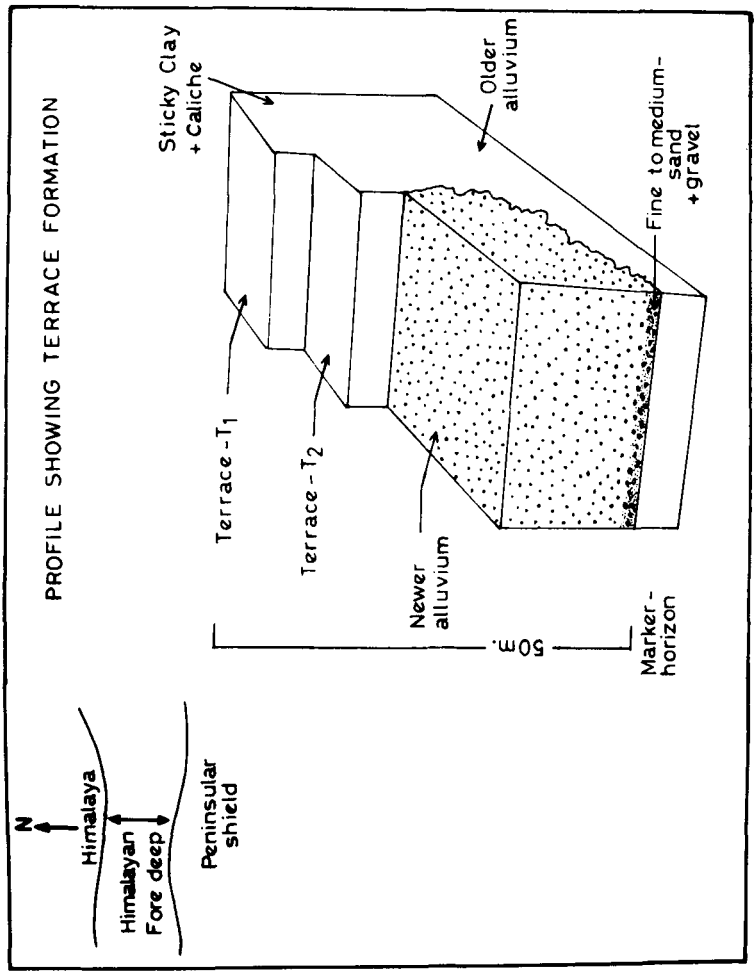

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along the lost courses of the river Saraswati, indicating availability of potable water at these sites at the time of habitation (Ghose, 1952),

h. the pollen diagram from a fresh-water lake at Pushkar in Rajasthan, documenting growth of aquatic plants at about 6,000 years b.p., and indicating the lacustrine environment in this region (Singh, et. a., 1974),

i. the pollen analytical studies of the 'Nal'-lake, northwest of Lothal (Fig. 5), indicating three major marine influxes, viz. at about 7,000 years p.b., between 6,000-4,000 years b.p. and 160 years b.p. (Vishnu Mittre and Sharma, 1979),

j. the palaeo-environment during Holocene times in the Bengal Basin, as reflected from palynostratigraphy, indicating encroachment of the sea on the south of Bengal Basin around 7,000-6,000 years b.p. and 5,800-5,000 years b.p. (Gupata, 1981), and

k. the hydrodynamic processes operating in this region during the Recent phase, the occurrences of severe droughts and overwhelming floods at the Harappan sites, the formation of caliche in the terraces of the Older alluvium and the deposition of Newer alluvium over the surface of the Older alluvium, which all go to signify how crustal deformation and adjustment of rocks, sediments, etc. during the Recent phase brought about upheavals and subsidence of landform in quick succession in the Indo-Gangetic Plain.

Neogene/Quaternary Boundary

Observations of Neogene/Quaternary Boundary in the Western and Peninsular India (Verma, 1981 and Prasad, 1981) reveal that the coastal regions were also affected by the tectonic movements of the Recent and historic times, which resulted in the emergence and submergence of the coastal land (Fig. 6). Radiocarbon analysis of the marine deposits has established that emergence had occurred prior to submergence at about 6,000 years b.p. (Prasad, 1981). Perhaps, emergence during the historic period ruined the flourishing ports of 'Coringa' near the mouth of Godavari, 'Kaveripatnam' in the Cauvery delta, 'Balasore' in Orissa, and 'Korkai' on the coast of Tinnevelly (Krishnan, 1960). In the same way, later submergence may

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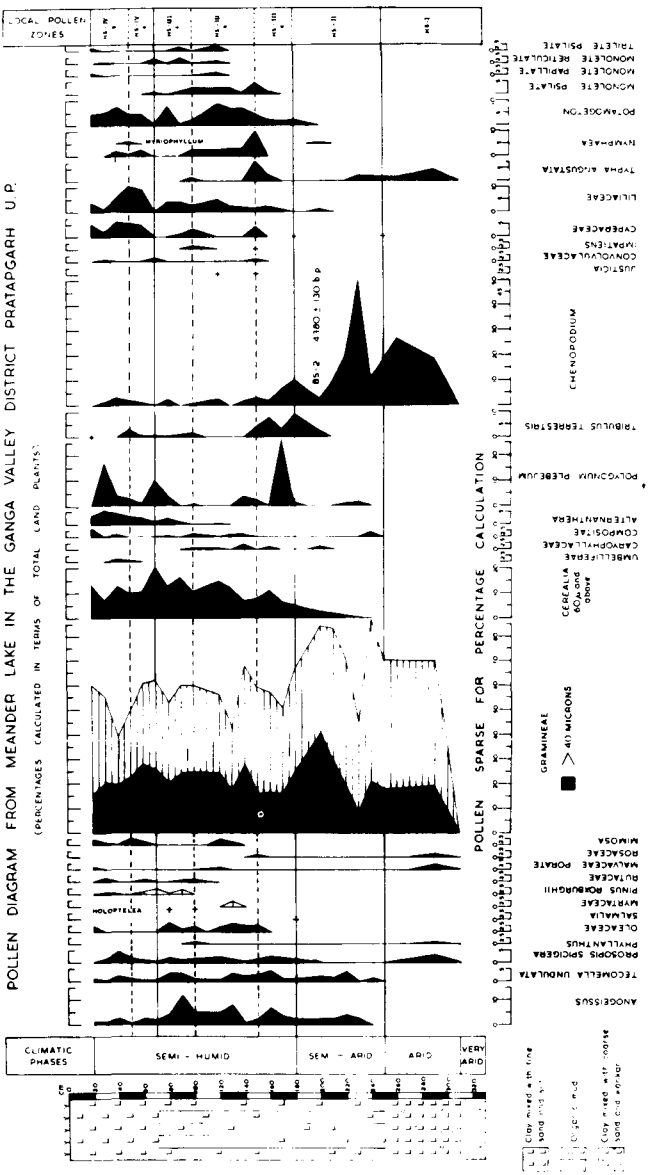

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perhaps have been responsible for the elimination of material evidence of the protohistorical cultures of the kingdoms of 'Kalinga', 'Andhra', 'Chola', 'Choda', 'Pandya', 'Keralaputtra' and 'Satyaputtra', which existed during the reign of Asoka, as referred to in his IInd and XIIIth Rock Edicts.

The Age of the Vedas and the Epics

During the Vedic period, the mighty Himalayan river Saraswati, appears to have been encroaching upon the Older alluvium landform of the Indus Valley (Griffith, 1896). The geomorphological and the palynological evidence reveals an upheaval of the landform between 8,000-6,000 years b.p., which led to regional sub-surface disposition of Quaternary sediments within an average of 30-40 meters below ground level. Thereafter, the river Saraswati which had formed the terraces during Middle-Upper Pleistocene times, fanned out into numerous river channels. Later on, perhaps, subsidence of the landform at about 5,000 b.p., resulted in the appearance of the river Saraswati after deposition of fluvial sediments. The earliest report of the drying up of the mighty Himalayan river Saraswati is to be found in the literature of the *Mahabharata*, where it says that the river went underground at '*Binasana*', near the present town of Sirsa. The *Mahabharata* also records reappearance of the Saraswati river at three places downstream, then known as *'Chamasodbheda'*, *'Sirodbheda'* and *'Nagodbheda'* (Ghose, et. al., 1979; Dey, 1927). Such changes in the environmental syndrome of the Indian sub-continent during 6,000-5,000 years b.p. tend to corroborate the traditional dates assigned to the 'natural hazards' of the epic age, known as *Mahapralayas*.

Degradation of the Rivers

The upheaval of the Older alluvium landform during 8,000-6,000 years b.p., led to rapid down-cutting and migration of the rivers. This created a very arid environment with ponding conditions at about 6,000 years b.p. As a consequence, perhaps, there had been continuous shifting of Neolithic habitations, in search of close proximity to river channels for potable water. Absence of Neolithic habitation, even beneath the Pre-Harappan level at Kalibangan, where excavations yielded an agricultural field with furrows running at right angles to each other in the north-south and east-west direction (IAR, 1968-69), goes to support the above hypothesis.

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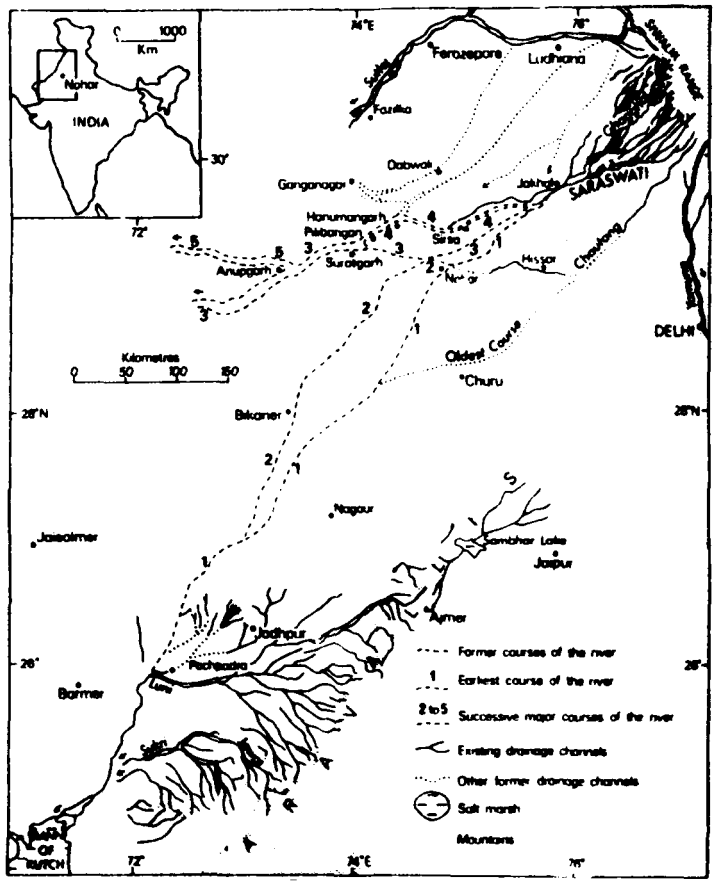

The Shifting Courses of the Saraswati River
Courtesy of Ghose et al, J. Geog. London
Vol 145, No. 3 (1979) p. 447

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Process of Cultural Evolution

However, the repeated drought conditions created by the severe down-cuttings of the rivers could not eliminate the entire Pre-Harappan population of this region. This is because "man himself, though a product of evolution, has initiated an evolutionary process of his own, otherwise termed cultural evolution, attributed to his innovative intelligence, remarkable skill and tremendous initiative" (Sharma, 1983). "Against every phenomenon involving climate, soil, air and water, man has also been able to devise special measures to withstand their natural onslaught" (Sharma, 1983). The Pre-Harappans were presumably able to withstand the natural calamities of repeated droughts by innovations such as the line sowing of mixed crops, the creation of masonry wells (Fig. 7), of water-proof community tanks (Wheeler, 1968), and of large civil granaries. The magnificent achievements of the Mature Harappans were products of cultural evolution, possibly unknown to their contemporaries, made necessary by geomorphological change.

Significance of Masonry Wells

The Harappan masonry well, as a source of assured water for both drinking and irrigation purposes, is still in use today, and like the heavy-type bullock carts of the Mature Harappans was not easily replaced by any subsequent innovation. Masonry wells are significant not only because they suggest the indigenous emergence of the Harappans, but also because the wooden rims of these wells provide valuable samples for radio carbon analysis. This remarkable innovation was feasible only in the Newer alluvium of the Indo-Gangetic Plain, where the sub-surface water was mostly fed by Himalayan precipitations, flowing subterraneously through river channels. In the Harappan technique, a wooden rim, probably of *Ficus glomerata*, was placed at the base of the cylindrical masonry structure, just above the phreatic level. The wooden rim was then driven down, by placing a heavy load at the top, and finally made to sit during summer in the zone of saturation, when the water table fell to its lowest level below the land surface (Fig. 8).

Aggradation of the Rivers

The subsidence of the Older alluvium landform at about 5,000 years b.p., caused intermittent floods and water-logging

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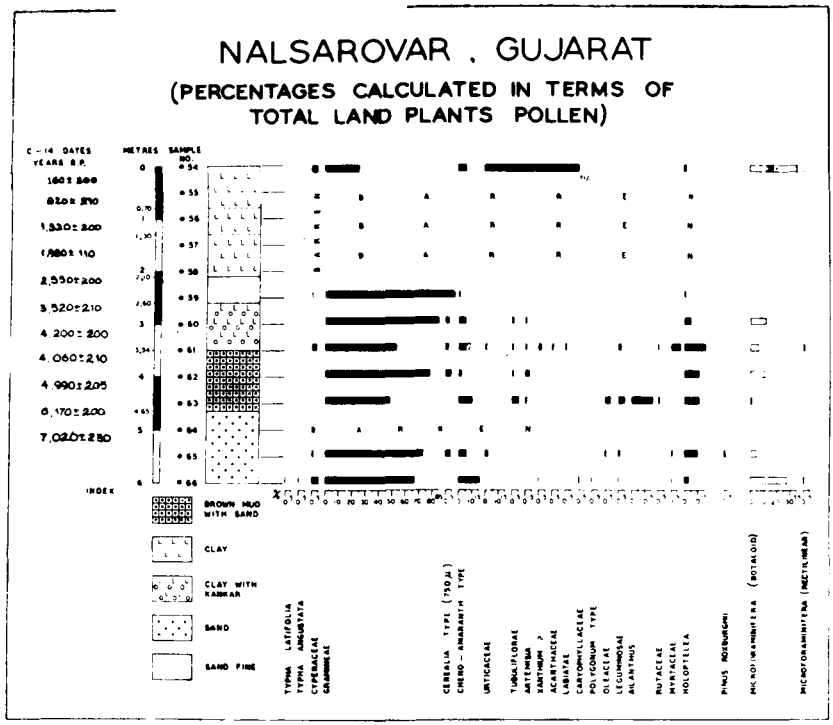

TEXT-FIG. 2 — Pollen diagram from the Nal Lake. For delimitation of local pollen zones, NS1 to NS4, kindly see section Biostratigraphy in the text.

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UPHEAVAL AND SUBSIDENCE OF LANDFORM DURING POST-PLEISTOCENE TIME

(a) Showing emergence of landform

(b) Showing submergence of landform

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Relics of Harappa

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in the Newer alluvium area. Planning to avoid the water-logging and the rush of flood waters in their house sites, the Mature Harappans laid out their cities on gridiron patterns with streets running at right angles to each other, providing paved lanes, underground drainage and sewage systems, and, above all, even raising the overall elevation by mud platforms at Harappa and Lothal (Sankalia, 1974). But it seems that the slow relentless rise of the waters of the Indus finally overcame the energy of the people. Perhaps some of the survivors of these devastating floods migrated to higher terraces on Older alluvium along the banks of the abandoned channels, which were free from flood menace and where, at the same time, potable water was available. The discovery of such a site in a shallow escarpment of a terrace at Dadupur on the bank of an abandoned channel of the river Sai of the Ganges System, flowing through Lucknow District (Sen Gupta, 1983), goes to support the above hypothesis. But the Newer alluvium, inspite of being affected by subsidence of the landform during Recent and historic times, always allured the people for intensive cultivation and habitation, and its old flood-plains were once again to become centers of civilization during the early historic period.

Unreliable C_{14} Dates

Hitherto, radiocarbon dating of the site of Mohenjo-daro and its connections with Mesopotamia has led the scholars to suggest a span from 2,300 to about 1750 B.C. But the dating of this extraordinary site is still debated. Excavations at Mohenjo-daro by Marshall in the 1920s, Mackay in the 1930s and finally by Wheeler and Dales in the 1940s, could not reach the lowest levels of this site, owing to the high water table. But "recent drilling at the site has brought up cultural matrial from as much as 39 feet (12.4m) below the modern plain surface, with the mounds rising 35 feet (10.6m) above this level. Much of this depth is made up of flood deposits, which many times overwhelmed the city" (Bray and Tramp, 1978). The sites of Kalibangan, Lothal and Harappa, were also affected by floods of the Recent phase (Sankalia, 1974). As a consequence, C_{14} dates of the worked samples of the fluvial deposits can in no case be correlated with those of the cultural layers of the Harappan period.

The geological cross section profiles of the sample sites of

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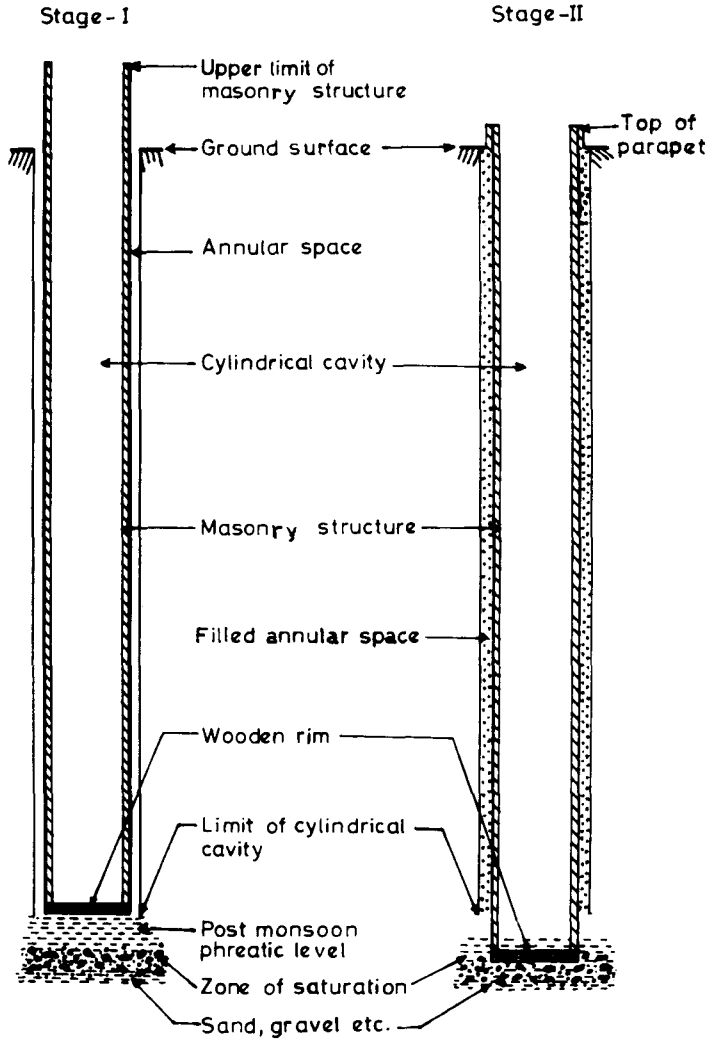
TECHNIQUE FOR CONSTRUCTION OF MASONRY WELL IN THE NEWER ALLUVIUM



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Lucknow District reveal that the intensity of subsidence of the landform in the Gangetic Plain during this period was greater than in the Indus Plain. Perhaps this was responsible for the total obliteration of all material evidence of Chalcolithic Culture from the Newer alluvium area of the Gangetic Plain, except for OCP sherds and Copper Hoards left behind by the devastating floods. Recent SEM analysis of the Gangetic sediments of the Chalcolithic period conducted by the Physical Research Laboratory, Ahmedabad, also indicates that these derived originally from glacial environments which were subsequently deposited by fluvial processes (Agarwal, et. al., 1978). As a consequence, none of the OCP sherds of the excavated Chalcolithic sites of the Gangetic Plain has the character of normal habitational deposits, and those found at the lowest cultural level of the *Mahabharata* site of 'Hastinapura', have a detrital appearance, signifying them to be worked potsherds of pluvial/fluvial deposits (Lal, 1968). Hence a reliance upon C_{14} and thermoluminescent dating of these worked samples for the reconstruction of the cultural sequence of the protohistoric period is not a proper approach to archaeology.

Conclusions

The anthropomorphic figure from the Copper Hoard site of Sheorajpur, District Kanpur, bearing an incised fish symbol (Fig. 9) similar to that of the elephant seal of Mohenjo-daro, goes to suggest that these cultures were contemporary and evolved from the Neolithic Culture, lying in the terraces of the Older alluvium belonging to Middle-Upper Pleistocene times. The Neolithic culture heralded the birth of the biotic village community in India, involving a well-defined division of labor and mutual interdependence and cooperation. Rig Vedic society, which comprised groupings of these rural communities under an heirarchial "constellation of institutions" reflects in one of its hymns the contentment and high degree of social cooperation and social responsibility found in Aryan society:

"Let all people be happy,
Let all be free from fear;
Let all see only good and noble,
Let none be afflicted by sorrow." (Griffith, 1896).

To summarize, geomorphological evidence is helpful in clarifying the protohistoric archaeology of India:

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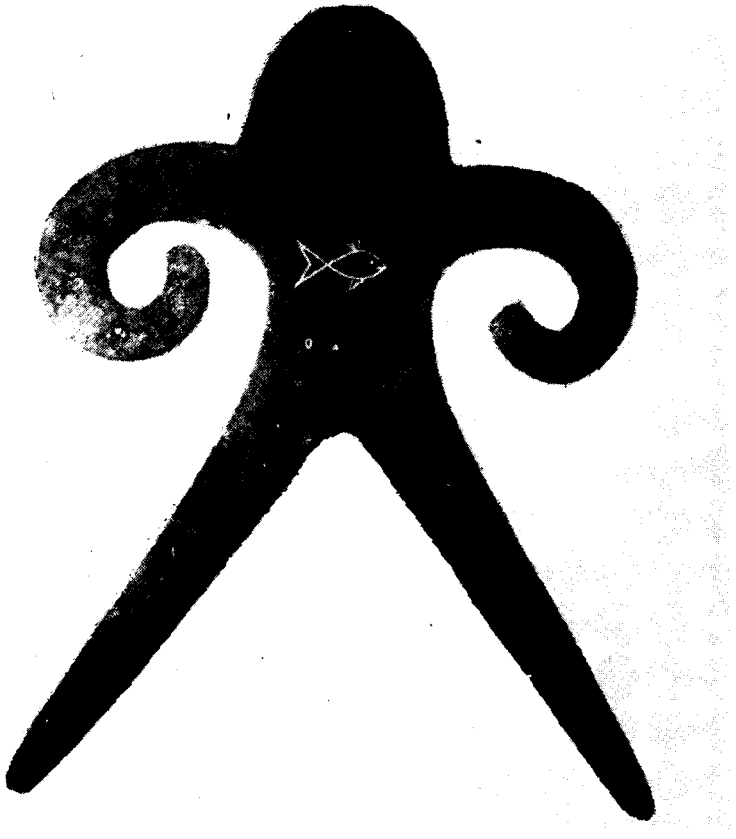

Copper Antiropomorph from Śivarājpur (Kanpur)
(Lucknow Museum No. O-37-A) (Rev.)

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Firstly, because it pushes back the Rig Vedic period well beyond 1500 b.p., and provides a tentative chronology to the *Mahapralayas* (natural hazards or disturbances) of the Epic Age;

Secondly, because it reveals that speedy changes in the environmental syndrome of the Indian sub-continent during Recent and historic times were caused by geomorphological factors: Global climatic conditions were not the causal factors behind such changes; and

Thirdly, because it reveals that reliance upon hitherto available C_{14} and thermoluminescent dates of the worked samples of the fluviatile deposits for reconstructing the cultural sequence of the protohistoric period is inadequate, and that a revision of the entire cultural chronology of the Harappan complex, in the light of geomorphological and palynological evidence, is necessary.

The author is appreciative to the assistance received from Patrons, Officers and Members of the Society for Environmental Archaeology of India for their cooperation, and in particular wishes to express his gratitude to Dr. Sen Gupta of the Department of Zoology, University of Lucknow, for the figures and diagrams illustrating this paper.

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THE PROBLEM OF OCHRE

JOSEPH VELO

Ochre has frequently been found in association with Lower Paleolithic hominid remains, and it has been suggested that ochre was used by early men for symbolic or artistic purposes. The author produces an argument in favor of its early use as a healing or medicinal agent.

The earliest evidence of the use of red coloring materials by fossil men can be readily understood in terms of an evolving hominid cognitive process. However, a real problem arises in determining the purpose for which oxides of iron, generally found in forms popularly known as "ochre", were used by Lower Paleolithic hominids. Evidence of the use of ochre has been found in association with *Homo erectus* remains in the form of ochre lumps and quarzite rubbing stones.

Numerous theorists have speculated on the potential symbolism associated with the decorative use of ochre as a coloring material, but my purpose in this paper is to draw attention to the possibility that ochre may have been used for curative purposes. The avenues open for speculation are limited in view of the scant Lower and Middle Pleistocene archeological records, but we should not overlook the healing properties of the iron compounds contained in the main varieties of iron oxides, which occur in clay form as red ochre (hematite) and yellow ochre (limonite) as well as in native earths (iron hydroxides). For the purpose of this work the geological difference between clays and native earths is of no consequence. After noting the medical properties of iron oxides we shall then consider the use of ochre as a healing agent in contemporary primitive societies, following which some general comments on intergenerational cultural transmission in Lower Pleistocene societies, such as would facilitate the growth of primitive medical skills, will be attempted.

Previous Theories Concerning the Uses of Ochre

Theories about the use of ochre by fossil man have until now tended to emphasise its symbolic and artistic potential. In the first group we find in recent times works by Bolton (1978), Turner (1967), and D'Andrade and Egan (1974), following a tradition going back to Bachofen (1925). This approach covers everything from presumably the most mystic-ridden and emotionally ridden individual situations, through

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"collective feelings and emotions" à la Durkheim, to media for the expression and expansion of social behavior in hominids (Hallowell, 1972).

The artistic approach finds substance in the argument that ochre, particularly in powdered form, was used primarily for aesthetic purposes. In this respect, the earliest manifestations could have been those of body painting, and, in the more advanced phases of the Paleolithic, the painting of walls and mobiliary objects. By this time, and probably since the Middle Paleolithic (Bordaz, 1970:48), ochre would have been supplemented by pigments of vegetable origin. This interpretation is advanced by Edwards (1978), Howell (1966), and Bordes (1972).

Contrary to the established fashion, we need to consider non-ideational and non-artistic uses of ochre, so many of which could have preceded any other uses since they would be related to man's immediate survival. The man considered here is the Lower Paleolithic man of the Lower and Middle Pleistocene. It is possible that he was of two distinct species: one, the well-established *Homo erectus*, and the other what could be called "early proto-sapiens" who sometime around half a million years ago was well on his way to replace *Homo erectus*. For the present hypothesis it makes no difference how many types of hominid co-existed in those days.

The Character and Form of Ochre

Let us first consider the most common form in which red ochre is found at early hominid sites: the ochre lump, found at living sites, with signs of transportation from sources as far as several kilometers from the places where they were discovered. The striations and signs of friction and fracture in these lumps have generally been interpreted as indications of deliberate use by man. Dyeing, for instance, is one of the intrinsic properties of the form of iron-bearing clay known as "red ochre", and one which, in the course of intelligent development, fossil man could not have failed to notice. Yet, long before man began to paint himself, other equally intrinsic properties of red ochre might have commanded his attention.

We may reasonably suppose that Lower- and Middle Pleistocene hominids were subject to varieties of sickness,

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just as they were to death. The life expectancy of man living in the Upper Paleolithic has been estimated at some twenty-five years. Death would probably have come as often from wounds as from infectious diseases contracted from others.

The use of red (and possibly yellow) ochre, hematite, or ferric oxide, could have been of invaluable aid to a wounded man. It is not impossible that the intelligent hominids of half a million years ago may have discovered its medical utility when ingested, but even if they did not do this, they had every chance of learning about its utility when applied externally, just as they learned about the uses of herbs and other aspects of folk medicine, on a trial and error basis. Writing in 1911, before the development of truly modern medicine, Wilson (1911: 203) recorded the medical use of external applications of iron salts contained in red and yellow ochre:

> While the salts of iron and the solutions have no action on the unbroken skin, on the abraded cuticle and on mucous membranes they have a powerful *astringent* effect by reason of their property of precipitating proteids; so that all *albuminous* fluids are *coagulated* by them. In consequence of this action on the blood, as well as their effects on the vessels themselves, by which the caliber of the latter is diminished by the contraction of the coagulated albumin, they tend to arrest haemorrage, and constitute in fact the most efficient *local haemostatics* at our command. While, however, some of the iron salts, such as chloride, the nitrate and the sulphate, have very marked astringent value, others are particularly inert in this respect. Solutions of both ferrous and ferrice salts have more or less *antiseptic, germicidal*, and disinfectant activity, and since in addition to arresting putrefaction, they neutralize the sulphur and ammonium compounds given off by decaying matter, they are also *deodoerizers*. Ferric oxides, furthermore, have the power of converting oxygen into ozone. (my emphases)

Ozone, as we know, is a powerful oxidising agent used for bleaching and for sterilizing water, and in the thirteenth century the oriental physician, Al-Samarquandi, mentions the use of scales of iron for washing and purging and as remedies for eye infections. They are also "drying and useful in cases of

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malignant ulcers" (Levey and Al-Khaledy, 1967:237). Any medical dictionary or any pharmacopeia shows that iron compounds are generally astringent and styptic.(1) It is not unreasonable to suppose that men living in the time period discussed here could have discovered, through experience, the benefits of using iron salts, whether as red or yellow ochre, hematite or limonite.

Clay-Eating

To the medical uses of iron applied externally can be added those of an internal nature, ranging from healing to nourishment, although here we tread on more controversial ground. On one side there are those who believe that the ingestion of ochre, clays and related materials, besides a whole variety of substances, an activity known as *pica*, may be promoted by iron deficiency of the same basic kind that accounts for neuromuscular disorders. On the other side there are those who see iron-deficiency as a *result* of clay-eating. Both sides are well represented in the literature.

Historical evidence which supports those who believe that clay is eaten because of iron deficiency can be found in reports of pica as early as the days of Avicenna (in Halsted, 1968: 1385). Alexander von Humboldt (1821) reported in the course of his travels in South America from 1799 to 1804, that clay was eaten to some extent *at all times* by the Otomac Indians along the Orinoco River. He even said that when the river overflowed each year they seemed to subsist for two months almost entirely on clay that contained iron oxide, and that they seemed healthy and robust. The African explorer, David Livingstone, commented upon clay-eating in his journal. The natives called it "safura", and it was a normal part of their regular diet. Clay from the walls of huts was preferred, and pregnant women, in particular, often ate clay. (Halsted, 1968: 1387)

The case for pica as a result of iron-hunger, a special form of hunger, and psychosocial, including economic, stress, has been made by, in the former case, Coltman (1969) and Crosby (1976), and in the latter, by Singhi et al. (1981) and Millican and associates (1956, 1968). Closer to home, Lourie et al. (1963: 143) noted the consumption of clay in certain cities in the southern United States, commented that "when members of a family moved north they have clay mailed to them by

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relatives who dig it from a favorite clay pit generally in a river bank. If clay is unavailable starch is used by some, apparently interchangeable." The practice of starch eating by pregnant black women in the south of the United States was also confirmed by Halsted (op. cit.: 1388). O'Rourke and his collaborators (1967) found geophagia in fifty-five percent of two-hundred randomly selected patients in obstetrical services in Georgia, U.S.A.

There are many who remain uncertain as to the medical or nutritional justification for the historically documented practice of clay-eating. For them the evidence is not clear whether geophagia is the cause or the effect of anemia. One of them, Vermeer (in a personal communication, and 1979), has shown that the iron content in clay varies considerably, and in a study performed in rural Mississippi, he and his associates (op. cit.) could not find any differences in hematocritic levels between those who practice geophagy and those who do not. He also noted that as iron compounds come in many forms, their chemistry in the gut is very complex, and that their usefulness could vary according to the form in which they were ingested.

Decorative Uses of Ochre

Thanks to the intervention of Wreschner (personal communication) this writer was made aware of field research carried out in Northwestern Australia by Father Anthony R. Peile, who became known to Wreschner through Professor Mulvaney. In one of his reports, Peile (1979) states that among the Gugadja, a group living in the eastern part of the Kimberley range, the use of ochre as medicine is of particular importance. They use both red and yellow ochre, put prefer red ochre when this is available. On the other hand, they only use white ochre, or pipeclay, for decorating their bodies in preparation for corroborees.

The use of ochre as a medicine applied to wounds has been recorded in Australia by Peile:

> Cover the spear wound with warm leaves. Chew ochre and spit it out all over the wound, wet it (in the mouth) and spit it out all around. The wound will soon dry up. Sing and it will become well. The wound will form a cicatrice and become dry, it will become small, form a scab and the scab on the wound will soon fall off (Peile, op. cit.: 215)

In this case, as Wreschner points out, the healing process

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makes use of an affective mediation in the form of singing. More specifically we are told that moistened with water, ochre is used on parts of the body where sores appear and "on those parts of the body where there are internal pains." (Peile, op. cit.: 217). An informant gave Father Peile the following description of the external use of red ochre for sores and internal pains:

> They rub with red ochre, they sing, they rub red ochre on the stomach, on the navel, on the legs of a person who can't get up, they rub on ash, they rub where the pain is inside. They tie up the head and both arms with a hair belt in order that he may get well. They sing and lay the person down. They sing and he becomes light (well). They put him in the sun, they put him in the sun in the middle of the day, sweat comes out of him. He scratches his head, he remains quiet, they sing and then leave him to sleep. He gets up, scratches himself and feels good. They give him water and bush tucker. He is well again (Peile, op. cit.: 217).

To enhance the effectiveness of the remedy, fat, preferably from Gould's sand goanna (*Varanus gouldi flavirulus*), is applied to the injured or affected area. A mixture of red ochre and water, followed by cold ashes, is applied to burns. Sometimes ochre and fat are applied to the head, arms or legs with the aid of a belt of hair, to ensure that the medication remains in place. It seems that when the early explorers reported the use of "mud" by the natives, they were referring to ochre, since aborigines have not been seen to use mud for medical purposes by any trained observer. Wreschner (op. cit.) gives us Father Peile's conclusions:

> It is difficult to determine what constituent of ochre is involved in the healing properties, but it may be surmised that minerals present in many types of ochre would have some beneficial effects on wounds and sores in much the same way as iron, magnesium, zinc, etc. formed the basis of many western medicines in the past. The fact that ochre plastered on the body would make the patient perspire would also contribute to his recovery.

The Use of Ochre in the Paleolithic

It is not inconceivable that Lower Paleolithic man learned about the healing properties of iron oxides and other materials

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contained in ochre lumps, on the basis of simple experience. However, once its medical properties had been established, would it not have been possible that man attempted to "cure" or prevent death with the aid of ochre? Ochre could have been applied to the bodies of the dead in an attempt to revive them. Later, through the application of thought, and possibly quasi-mythical concepts, it could have been applied to bones also. The relationship between blood-flowing and life should have led to a symbolic regard for the color red, being the color of blood (Gallus, 1979).

The presence of ochre at two sites, in particular, has been much discussed: Terra Amata and Becov, in both cases at the initial level of occupation. The Terra Amata site has been dated about 450,000 years ago, corresponding to a seasonal seashore camp of elephant hunters. Seventy-three red ochre pieces were found by its explorer, Henry de Lumley (1969), who believes the ochre must have been put to some use by the Acheulian residents. According to him (1969: 50), the fragments already mentioned have clustered or glossy surfaces.(2) The cause of this characteristic is the subject of a hypothesis made by Couraud (1983: 140), who attributed it to the rubbing of the substance (which he seems to accept as red ochre) against a very soft object, possibly human or animal skin.(3)

Couraud (op. cit.) includes this activity within his "domestic function" category in the use of colorants,(4) which includes the use of red ochre in the preparation, tanning and lustering of animal skins as described by F. Audoin-Rouzeau (1979). If Couraud is right in his estimation of the skin-improving uses of red ochre, the possibility that it had also a dermatological curative function cannot be denied. Whether dealing with skin diseases, bleeding, and even infections, red ochre could have had more uses in the Lower and Middle Pleistocene than we have been aware of in the past. But, if red ochre did indeed serve as a method of curing bleeding and of healing wounds, it might also be applied to the bodies of the newly dead. Fear of failure to achieve a cure could have led to the entire body being covered with ochre. In the case of deaths, the use of ochre would have represented the continuation of the efforts to save the person, possibly leading to the idea of a belated recovery —what today is called a "resurrection" — or simply as a symbolic duty demonstrating the desire of the living to assist the dead to their utmost ability.

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Those Who Express Doubt

All of the above notwithstanding, evidence for the use of ochre prior to the Upper Pleistocene (Middle Paleolithic) has been questioned by some scholars. Butzer (1980), for instance, states that in none of the stratified Acheulian open-air sites he had studied in Spain and South Africa, did he find any evidence of ochre manipulation or use. In fact, he was unable to verify its use even in the Mousterian strata at various sites in both areas, including the well-known El Castillo site! He questions the two lumps of "ochre" claimed for Olduvai Bed II.

Another who seems unconvinced is Wreschner (1983). Even though his prime interest is in the development of language and of hominid mental capacities, his research and experiments have some bearing on our question. After carrying out a series of firing experiments on clay materials from Ubeidiya in the Jordan Valley, he rules out the possiblity of "red color manipulation by *Homo erectus* populations" at Terra Amata and Bečov I at any time prior to 250,000 BP. In fact, he believes that the use of ochre commenced with Neandertal man.

> In the case of Terra Amata I have demonstrated experimentally that clayey yellow and brown native earth, similar to those found at Terra Amata, can acquire red color shades when exposed to short grass fires. And that the fragmentation of bigger lumps can occur by water action . . . Their colors, size, and distribution may be due to natural agencies (op. cit.: 62). The trend of (the sequences of) color change of the Terra Amata pieces and those of experimental material is similar (op. cit.: 69).

As for size, out of seventy-three pieces:

> Pieces of more than 15 mm. in length or breadth are scarce. Especially prominent is the number of very thin fragments. Only 2 are in the 13 to 15 mm. range (op. cit: 67). It is questionable if these characteristics denote unused waste or originally bigger pieces. Heated clayey ochre tends to break under the effect of water activity. It is possible that precipitation or even flooding caused the fragmentation of most of the material after it underwent firing by grass or brush fire or local conflagration (op. cit.: 70).

While recognizing the logical validity of Wreschner's arguments, this writer would like to point out that as Wreschner

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(op. cit.: 63) himself indicates, "the uniformly fragmentary character of all ochre remains in all layers is noteworthy." Even with the fact that most pieces are small and very thin, how do we interpret the distribution? Can it be interpreted as accidental throughout the entire period of occupation of Terra Amata? Wreschner (op. cit.: 67 is also unwilling to accept that "the fragmentary character of the assemblage can be explained as the remnants of rubbed pieces." Does his statement cover all, most or only some of the pieces?

With an effective range from two to twenty-two millimetres in length and breadth, and two to fifteen millimeters in thickness, the present writer is inclined to believe that if Couraud's (op. cit.) method was applied to these, some signs of wear might appear possibly attributable to rubbing. Even so, allowance must be made for the results of Wreschner's (op. cit.) firing experiments, wherein the sequence of color range from light red to dark reddish-brown from core to cortex reveals that "the trend of color range fof the Terra Amata pieces and those of the experimental material are similar" (op. cit.: 67). Admittedly, at this point something more is required in the way of evidence, either a reinterpretation or addition, to reasonably establish that the Acheulian hunters at Terra Amata regularly collected red iron oxides or yellow to brown iron hydroxides to convert them into red ochre by firing. This firing would have resulted in a product from which red color pigments could have been obtained, and used for purposes unknown, as De Lumley thinks (in Wreschner, op. cit.: 65), or for healing activities, as this writer is inclined to believe.

Summary

If we put aside Butzer's (op. cit.) objections to the actual use of ochre during the time we are concerned with here, and hypothesize that iron-bearing clays *were* used during the Lower Paleolithic, their use need not have been restricted to technological or aesthetico-symbolic considerations. Regardless of whether we conceive Lower and Middle Pleistocene hominids to be mentally incapable of symbolization (*Homo erectus?*), or to be early sapiens forms of hominids endowed with the intellectual capacity necessary for the creation of mental symbols (*Homo sapiens*) it would be reasonable to assume that one of the first uses of iron-bearing clays by our forebears may well have been curative.

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TOWARD A QUANTUM MECHANICS OF INTELLIGENCE

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Multiplying memory span by mental speed, we obtain the entropy of short-term memory capacity, which is rate-limiting for performance in mental ability tests as in everyday cognitive requirements. Information entropy can also be calculated by using the entropy formula for uncoupled quantum particles, where memory span becomes the quantum number and bosons are created by spontaneous symmetry breaking. The well-established empirical fact that high IQ subjects exhibit more complex waveforms in the evoked EEG response, is the consequence of a quantum number increase (i.e. a higher energy content) for the wave function of the macroscopic quantum oscillator brain. Thus, individual differences in general intelligence (Spearman's *g*) are reflected in individual differences in the ability to reduce the uncertainty of information, i.e. in individual differences in entropy reduction, caused by individual differences in brain energy metabolism. Therefore, cerebral glucose metabolism rate and IQ have been found highly correlated. The brain consumes glucose as an almost exclusive source of energy. The responsible regulatory mechanism of oscillatory glycolysis is redox control by thiol disulfide exchange in which the genetic polymorphism of glutathione peroxidase plays a key role. In such a way the fundamental chemical needs of a living cell, high-energy phosphate stores (ATP) and reducing power (NADPH), depend on the cortical concentration of glutathione. IQ-correlated differences in acetylcholine system and lipid peroxidation are further consequences, and these results are corroborated by learning experiments with inbred strains of mice.

During the last years a number of empirical correlations between biochemical parameters and results in conventional mental tests, measuring the intelligence quotient (IQ), have been reported by several investigators. Activities of brain choline acetyltransferase (r = .81; Perry et. al. 1978), brain acetylcholinesterase (.35; Soininen et al. 1984), and erythrocyte glutathione peroxidase (.58; Sinet, Lejeune and Jerome 1979) are correlated with IQ and, especially intriguing, also the cerebral glucose metabolism rate (about .60; de Leon et al. 1983; Chase et al. 1984). These results were byproducts of medical research, not intended to clarify the physiological background of normal intelligence, but to throw light on the metabolic causes of premature senescence and cognitive losses in Alzheimer's disease (Perry et al. 1978; Soininen et al. 1984; de Leon et al. 1983), Down's syndrome (Sinet, Lejeune and

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Jerome 1979), and Parkinson's disease (Agid et al. 1984). However, because many researchers see no qualitative difference (Mann, Yates and Marcyniuk 1984) between Alzheimer's disease and normal aging (and this disease can be understood as one tail of a continuous distribution) and because correlations with IQ were also confirmed in the healthy comparison groups (Soininen et al. 1984; de Leon et al. 1983; Chase et al. 1984), these results deserve more attention. In the context of positive knowledge in genetics, psychology, neurobiology, information theory, and physics we will search in the following for a deep theoretical explanation of this relationship between mental performance and the metabolism of brain glucose, glutathione, and neurotransmitters.

The Entropy of General Intelligence

General Intelligence (Spearman's *g*), seen by many as the core of any IQ-test, can be measured for about 80 years (Spearman 1904) and ever since not only psychometricians (Jensen 1979; Eysenck 1984) tried to understand what it is. Spearman himself conceived of the basis of *g* as some kind of electrochemical energy available to the brain, with some persons possessing more of this energy than others. Having made some progress during the last decades in our attempts to discover an objective reality underlying Spearman's general factor of intelligence, we must begin with Hick's Law (Hick 1952):

$$RT = K \log_2 H$$

(where K is an individual constant)

Hick rediscovered the forgotten finding by Blank (1934) that choice reaction times RT increase as a linear function of the increase in the amount of information entropy H (Jaynes 1957) in the stimulus array, when entropy is measured (as generalized by Hick) in bit, that is, the logarithm (to the base 2) of the number of choices. The slope of this function can be interpreted as a measure of the speed or the rate of information processing. The reciprocal of the slope expresses the rate of information processing in terms of entropy reduction per second (i.e. bit/s).

For example, Oswald (1971) had his subjects sort playing cards according to different aspects such as color, number or points, or both together. Sorting was quicker when fewer aspects had to be taken into account and was found to be

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highly correlated with IQ.

Hick's Law holds only strongly, when the number of stimuli does not exceed nine, the upper limit of memory span. Short-term memory (STM) span, a subtest of classical mental ability tests from the very beginning (Süllwold 1964), is defined as the number of elements (digits, letters, chunks) that a person can attend to simultaneously or retain together in immediate memory. Persons with an IQ of about 100 retain 4 or 5 digits together in memory, high IQ persons 8 or 9 (for representative population data see e.g. Lehrl, Gallwitz and Blaha 1980). Reduced memory span (about 2) is an index of mental retardation and brain damage (as by hypoxia), and a shared character of both very young and very old-aged people, including Alzheimer's patients (de Leon et al. 1983; Chase et al. 1984). Subjects who can recall 7 digits forwards in correct order can usually recall only 5 digits backwards, because the operation of reversing the digits takes a certain amount of STM storage capacity.

Drawing the theoretical conclusions from Hick's Law and memory span (Bachelder and Denny 1977), already in 1960 Frank had introduced the concept of STM storage capacity, which he recognized to be the rate-limiting step of all cognitive functions. According to Frank (1960) the information entropy H (bit) of STM capacity is the product of the duration I (s) of forward memory span multiplied by processing speed C (bit/s), that is,

$$H = I \cdot C$$

If entropy is a measure of the atomistic disorder, its reciprocal can be regarded as a direct measure of order (Jaynes 1957). Hence entropy, taken with the negative sign (negentropy), that means information entropy, is itself a measure of order (Frank 1960; Brillouin 1967). In other words, high IQ subjects have higher order-creating brain power.

Mental processing speed can, besides by choice reaction time RT (Jensen 1979), in test batteries be operationalized by reading rate (Lehrl, Gallwitz and Blaha 1980; Baddeley, Thomson and Buchanan 1975), inspection time (Nettelbeck and Lally 1979), scanning information in STM (Sternberg 1975), or retrieving information from long-term memory (Hunt 1978). Fagan (1984) found that even individual differences in preferences for visual novelty among infants are related to later

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intelligence.

Span (Süllwold 1964) and scan (Sternberg 1975) are only two faces of one and the same coin: the greater the memory span, the faster the processing speed. In appropriate samples both variables are perfects correlated (r = 1.00; Lehrl, Gallwitz and Blaha 1980; Cavanagh 1972; Brown and Kirsner 1980; Nicolson 1981). Span can be predicted on the basis of the number of simple words which the subject can read in 1.87s (Lehrl, Gallwitz and Blaha 1980; Baddeley, Thomson and Buchanan 1975; Nicolson 1981).

During the duration of one psychological moment one bit of information is processed (i.e. one break of symmetry measured) (Frank 1960). Because mental processing speed is a function of information entropy (Hick 1952; Frank 1960) an average adult person (IQ 100) experiences 16 psychological moments per second (Eysenck 1984; Lehrl, Gallwitz and Blaha 1980; Frank 1960) or in other terms has a critical flicker frequency (fusion frequency) of 16 Hz (Frank 1960; Lehrl, Gallwitz and Blaha 1980). The representative population distribution agrees very well with results published by Bennett (1968), who accomplished a fourier transformation of averaged evoked electroencephalographic (EEG) responses and also reanalyzed (Bennett 1972) the data from Ertl and Schafer (1969), who discovered the correlation between the latencies of evoked EEG responses and IQ scores. According to Bennett (1968; 1972) and Lehrl (1980), high IQ subjects (IQ above 123) go through 20 or more psychological moments per second, low IQ subjects (IQ below 75) go through only 8 moments or even less. Notice, that one of the independently found but identical results comes from an analysis of EEG responses (Bennett 1968; 1972), the other from simple mental testing (Lehrl, Gallwitz and Blaha 1980) and data, interpreted on the basis of Frank's theory (1960). And it was especially Lehrl (Lehrl, Gallwitz and Blaha 1980), who stressed the congruency between the differential aspects of Frank's concept of STM capacity (1960) and Spearman's *g* both seen as the label for the single largest independent source of individual differences that is common to all mental ability tests, regardless of form, content, or sensory-motor modality.

Since correlations between speed of stimuli-evoked electromagnetic brain waves and IQ have been confirmed in at least 30 independent studies (Rothenberger and Meyer-Dietrich 1984),

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also with respect to memory span (Polich, Howard and Starr 1983), their existence can be seen as well-established beyond any reasonable doubt (for an exhaustive review see the monograph by Giannitrapani 1985). By magnetencephalography the latencies can even be measured prenatally (Blum, Saling and Bauer 1984).

Peters, who was an acquaintance of Spearman from their joint study in Leipziz, had already in 1915 published data from a comprehensive three-generation family study with the claim that segregation at one gene locus may account for *g*. Peters suggested that at least three genotypic classes of *g* show considerable overlap, caused by measurement error and environmental influences. Allocation of a subject to the type with low, medium, or high scores cannot be performed in a deterministic way but has to be done by an iterative probabilistic procedure. However, if we consider the probability of a single individual belonging to a specific type, a Mendelian analysis can be carried out. These premature considerations and results attracted little attention.

Starting in 1970 with the 1329 most successful participants of nine nation-wide mathematical competitions (a sample from a total of 2,800,000 East German school children) Weiss (1982) arrived – by analyzing the distributions of their relatives of the first, second, and third degree – at the conclusion that an autosomal-recessive Mendelian allele M_1 in the homozygous state is the prerequisite for an IQ higher than 130. Based on these data he asserted that the gene frequency p of the hypothetical major gene M_1 of general or fluid intelligence, respectively, is about 0.2. From the Hardy-Weinberg-Law he calculated the frequencies of the genotypes corresponding to the following median IQ: M_2M_2 IQ 94, M_1M_2 IQ 112, M_1M_1 IQ 130. For a number of widespread nonverbal tests Weiss verified a linear relationship of 2: 3: 4 in raw test scores and processing time between IQs 94, 112, and 130. Therefore he postulated, that, analogous to many other results in biochemical research, these discrete differences in mental speed result from an underlying polymorphism in the activity of one very central regulatory enzyme, in which the quantitative effects of the alleles M_1 and M_2 are additive in a simple way. And any major gene locus implies, of course, the existence of a number of minor physiological factors as well as environmental influences.

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It is one of the striking properties of Weiss' hypothesis (1982) of discrete genotypes underlying *g* that it explains why so often results could not be replicated or only with substantial lower correlations. If we sample only within the range of one type, e.g., the sample comprises only university students of mathematics and physics, then all correlations between the various subtests measuring g, as choice reaction time, memory span, time to escape masking in visual backward-masking, and complex tests like Raven's matrices or the latencies of evoked EEG potentials, tend toward zero. If the sample is of individuals representing the three types in equal proportion, the correlations will reach their maxima, maybe .80. For a sample representative of the whole population the correlations will be lower again, maybe .50, dependent upon the reliabilities.

The major gene locus hypothesis of *g* challenged the logical contradiction between One *g* and the assumption of Many genes as its neurochemical equivalent by established authority. However, in his latest paper, Jensen (1985) conceded diplomatically that "the physiological substrate of *g* will eventually turn out to be some unitary feature of neural activity". The reason for this change of mind might be the verification by Frank (1983) and Lehrl (Lehrl and Frank 1982) of Weiss' prediction (1982), that *g*, if measured as information entropy (Jaynes 1957), exhibits a distribution where the M_1M_1 type processes twice as much information (130 bits) as the type M_2M_2 (65 bits), with the heterozygous type M_1M_2 lying exactly between the two values (105 bits). Consequently and in contrast to standardized (i.e. normalized) mental ability scores, STM capacity (Frank 1960), measured in bit, shows a skewed population distribution (as mental speed measures and memory span) (Lehrl, Gallwitz and Blaha 1980; Weiss 1982) far from Gaussian. And critics of any genetic hypothesis should be aware that the relationship between IQ and information entropy (and henceforth energy), highlighted by our present study, is an easily replicable empirical fact, which exists independently of any specific genetic hypothesis, whether polygenic or other.

Summarizing, we can state that individual differences of intelligence are reflected by individual differences in the ability to reduce the uncertainty of information (Lehrl, Gallwitz and Blaha 1980; Frank 1983). According to thermodynamics, the

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measurement of 1 bit of entropy, that means of one break of symmetry, requires an energy of 1 kT 1n2 (Szilard 1929), where k is Boltzmann's constant and T is absolute temperature. Hence the STM capacity (i.e. the energy of *g*) of an individual with an IQ of 130 corresponds to an energy of 130 kT 1n2 (equals 90 kT), individuals with IQ 94 have 65 kT 1n2 (equals 45 kT) available. Where can we find the ultimate cause for such striking differences?

The Biochemistry of General Intelligence

The brain consumes glucose as an almost exclusive source of energy. Although the human brain represents only about 2% of the body weight, its energy consumption is about 20% of total body energy requirements. Of all the nutrients, only glucose is able to satisfactorily maintain the metabolism of cerebral tissue. Gluconeogenesis, the formation of new molecules of glucose from other components, is absent in the brain. The energy stores in the brain are almost negligible when compared with the high rates of utilization and the brain is, therefore, dependent on the continuous replenishment of its glucose supplies by the cerebral circulation. Interruption of the circulation results in a loss of consciousness and irreversible damage of STM capacity within minutes (Reinis and Goldman 1982).

It would defy the most fundamental laws of themodynamics, if individual differences in intellectual work capacity, i.e. in brain power, and negentropy could not find their counterpart in individual differences of brain energy metabolism. Therefore, it is an outstanding event that two research groups (de Leon et al. 1983; Chase et al. 1984) report significant correlations between regional cerebral glucose metabolism rate and a number of IQ tests, including memory span and mental speed. By positron emission tomography of radioactive fluorine it became possible to quantify glucose metabolism in milligrams per 100 grams of brain tissue per minute. Alone de Leon et al. (1983) report no less than 72 significant correlations (mean around .60) with this measure. Since both tests and glucose metabolism rate are far from perfectly reliable, these correlations are very high indeed. Test performance and cerebral glucose metabolism in the Alzheimer's and normal control groups were often closely related (Chase et al. 1984). Consequently, stimulation of the

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brain with stimuli of different entropy, that means with frequencies of 5, 10, or 15 Hz, produces a frequency dependent increase in the mean rate of glucose utilization (r = .77), which in turn is correlated with local cerebral blood flow (.95) or cerebral oxygen utilization (Yarowsky and Ingvar 1981).

The crucial question, we must ask, is: how is it possible that a unitary mechanism (perhaps a polymorphic gene locus and its effects) accelerates, brain energy metabolism in high IQ subjects without disturbing the balance of excitatory and inhibitory signals? If we assume the usual position that mental performance is a function of a large number of neurotransmitters (Reinis and Goldman 1982), whose pathways exhibit an appreciable degree of multilocal genetic variation, and such a position might be right for individual differences in personality, for *g* we will get no answer. Nevertheless, already Nachmansohn (1975) emphasized the key role of thiol disulfide exchange as a superordinate regulatory mechanism, as he wrote: "It has been speculated that these opposite results of stimulation, i.e. depolarization and hyperpolarization, may be attributable to different types of transmitters, in spite of the evidence, that a compound such as acetylcholine may have both excitatory and inhibitory effects....Reactions involving S - S or S - H groups of...proteins..may readily account for the apparently opposite effects of the same control mechanisms."

The regulation of glucose consumption in the nervous system is through energy demand. The activities of the key enzymes phosphofructokinase and hexokinase are finely tuned to meet the energy needs of the tissue. There exists a reserve capacity of activity such that under conditions of high energy (e.g. intellectual work) these enzymes can increase the rate of glycolysis accordingly. The futile rate-limiting cycle interconverting fructose 6-phosphate and fructose 1.6-diphosphate in the glycolytic pathway serves as the oscillatory basis of energy metabolism, and is seen by many researchers as the neuronal pacemaker (Chaplain 1979; Reinis and Goldman 1982). The two enzymes of this cycle, well-known for its distinctly marked phenomenon of hysteresis (Sel'kov 1979), seen as a prequisite to STM and originally discovered by elucidating magnetism, are affected in reciprocal fashion by thiol disulfide exchange (Gilbert 1982). Whereas phosphofructokinase is reversibly inactivated by oxidation and ATP, the companion enzyme

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fructose 1.6-diphosphatase is activated by reaction with disulfides as glutathione disulfide (GSSG) (Gilbert 1984). The redox equilibrium for this enzymatic flip-flop switch is given by:

$$CoASSG + GSH \rightleftharpoons CoASH + GSSG$$

At this point we remember the correlation (.58) between IQ and glutathione peroxidase (GSHPx) activity (Sinet, Lejeune and Jerome 1979), a genetically polymorph enzyme (Beutler and Matsumoto 1975; Golan, Ben Ezzer and Szeinberg 1980). Whatever the mode of action of the glutathione (GSH) system, the reaction leads to conversion of GSH to GSSG. Brain GSHPx catalyzes, with tremendous velocity, the reduction of hydroperoxides of polyunsaturated fatty acids, which are very important constituents of phospholipids of cell membranes (Kaplan and Ansari 1984). In modulating the GSH/GSSG ratio, GSHPx not only contributes to the regulation of glycolysis (Gilbert 1984), but also both the adenylate energy charge (Rehncrona et al. 1980) and the NADP/NADPH ratio (Grimm 1978) are perfectly correlated (r = 1.00 !) with glutathione status. In such a way the fundamental chemical needs of a living cell, high-energy phosphate stores (ATP) and reducing power (NADPH) depend on the cortical concentration of glutathione. In the near future, it can be expected that the rate of high-energy phosphate utilization in the brain will be studied by phosphorus nuclear magnetic resonance spectroscopy and be correlated with IQ (for preliminary results see Hope et al. 1984).

Aware of the role of energy metabolism and its regulation, we will now be prepared to expect and to evaluate a large number of strong or weak correlations between neurochemical parameters, especially neurotransmitters, and IQ (Reinis and Goldman 1982). Proteins and membrane domains with essential SH-groups, as coenzyme A (CoA), pyruvate dehydrogenase, the acetylcholine system, the sodium pump, the synaptic glutamate receptor, several cytochromes, cytochrome oxidase (hence oxidative phosphorylation), folrin and many others are among the candidates for rapid vibrations, which frequency is influenced by the thiol disulfide ratio (Gilbert 1984). Dependent on glycolysis-derived pyruvate and acetyl CoA (Reinis and Goldman 1982), especially the parameters of the acetylcholine system should be strongly linked to memory performance. And this is in full accordance with a large body of evidence accumu-

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TABLE 1

Longevity, serum peroxide levels, learning speed, and parameters of the acetylcholine system in inbred mouse strains
(for the original values, units and sources see Weiss 1984)

	Inbred mouse strain		
	DBA/2	Balb/c	C57Bl/6
Reciprocal mean life span	100	85	68
Serum peroxide level	100	54	46
Learning speed	100 (DBA)	59	48
Hippocampus:			
Acetylcholine radioactivity after 20 s	100	93	48
Temporal cortex:			
Acetylcholinesterase activity	100		57
Choline acetyltransferase activity	100		55

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lated during the last decades (Bartus et al. 1982). To emphasize the close link between energy metabolism and acetylcholine, we refer to the correlation (.80) between adenine nucleotide content and the synthesis of acetylcholine (Sims et al. 1983), found in even the same sample, where a correlation (.81) between choline acetyltransferase activity and IQ had been reported earlier (Perry et al. 1978). These results in humans are corroborated by animal studies (Weiss 1984).

Buselmaier, Geiger and Reichert (1978) proved by cross-breeding that learning speed in mice (see Table 1) is inherited in simple monogenic fashion, i.e. by a major gene locus, a hypothesis, already put forward by Oliverio (1974) on the basis of his own experiments.

In 1972 Kosower had published a first theory in which GSSG is assigned the role of producing STM as disulfide bonds and conformational changes of proteins. Because thiol disulfide exchange distinguishes between spatially separate scalar redox reactions and the vectorial translocation of a hydrogen carrier, such a system can be classified as a group-translocation system with scalar coupling, having the potential of information encoding by symmetry breaking.

Whether the polymorphism of GSHPx is really identical with the searched major gene locus of *g* cannot be finally decided at the moment. In population studies (Beutler and Matsumoto 1975; Golan, Ben Ezzer and Szeinberg 1980) a mean enzyme activity of about 24 U GSHPx/g Hb was found. In contrast, 100 healthy university students had a mean of 40.5 U (Lane, Dudrick and Warren 1981). This seems to be another argument for the association of high IQ with high GSHPx activity. However, it cannot be ruled out that the quantitative polymorphism of GSHPx is itself the function of a supergene polymorphism of unknown nature. Such supergenes regulating cellular longevity GSHPx and other antioxyenic enzymes have been found in other biological objects (Munkres and Rana 1984) (compare also Table 1).

The fine tuning of synaptic membrane fluidity, the brain tissue specitity, and age-dependent alterations are brought about by an additional mechanism, namely lipid peroxidation (Weiss 1984), which in turn is a function of endogenous scavengers of free radicaly as GSHPx. For example, two- to fourfold activation of adenylate cyclase in parallel with lipid peroxida-

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tion was only observed in synaptic membranes and not in any other membrane investigated (Lee et al. 1982). And the longitudinal developmental curve of growth and decline of STM capacity and the relative brain lipofuscin content are mirroring, both with a turning-point at an age of about 15, STM capacity (read always memory span and mental speed) reaching its maximum (Riedel 1965), lipofuscin (a waste product of lipid autoxidation) its minimum (Siakotos and Munkres 1982). From this follows a strong correlation between IQ and the accumulation of lipofuscin content during normal aging and, more rapidly, in Alzheimer's disease (Perry et al. 1978; Soininen et al. 1984).

GSHPx can be studied by fetoscopy at 17-24 gestation (Lestas and Rodeck 1984); a correlation (.67) has been found between GSHPx activities of mothers and their newborn infants (Perona et al. 1979).

Toward a Quantum Mechanics of Intelligence

Especially neoPiagetian theorists (Pascula-Leone 1970; Halford and Wilson 1980; Case 1985) have claimed memory span to be the missing link between psychometrically defined intelligence and cognition, i.e. span, to be the most important human limitation in reasoning and problem solving. Changes in children's logical abilities are contingent upon a maturational increase of working memory span, because cognition tasks of different complexity differ in the information amount that they require the subject to keep in mind simultaneously when executing them (and children at age 3 have only a span of 3 as mean; Halford and Wilson 1980). By analyzing the span demand of a task, it is possible to predict which tasks children of a given age will pass or fail (Halford and Wilson 1980; Scardamalia 1977; Case 1985). By analogy performance of adults in complex tests like Raven's matrices can be predicted. In such a way the gap is closed between tests of basic processes (span and speed) and individual differences in complex information processing, understood by non-psychologists as the real "general intelligence" of everyday life, which is responsible for scholastic achievement and is found to parallel the division of labor in any advanced society.

In the pioneering research by Pascual-Leone (1970) the maximum of memory span became the mental energy operator

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M. Maximum M power is characterized as the maximum absolute number of different schemes (including overlearned complex sub-routines and strategies) that can be activated in a single mental act. Pascual-Leone (1970) understands memory span as the maximum of discrete and equal energy units (quanta) which every subject has at his disposal. Access to chunks in memory is random (Pascual-Leone 1970; Halford and Wilson 1980), i.e. the available energy quanta are not distinguishable. If a task needs the activation of all available M power, the solution is only reached after several activations, where the probability distribution of the random variable x (i.e. the number of different responses produced by the subject) can be calculated on the basis of the combinatories of the total number n of cues in the stimulus compound and available energy quanta k (Pascual-Leone 1970). By applying the Bose-Einstein occupancy model of combinatorics and quantum statistics (Landau and Lifschitz 1958)

$$Pr(x) = \binom{n}{n-x}\binom{k^2-1}{x-1} \div \binom{n+k^2-1}{k^2}$$

to learning experiments with children of different age, Pascual-Leone obtained a very good agreement between empirical probabilities "(Pr(x)" and Bose-Einstein predicted theoretical probabilities Pr(x). For the sample of 11-year-olds, mean IQ 119, he obtained the following empirical distribution of response levels $Pr(x_1)'$, $Pr(x_2)'$,...in 1297 experiments (theoretical probabilities Pr(x) in parentheses):

$Pr(x_1)'$ 0.01 (0.01); $Pr(x_2)'$ 0,12 (0.13); $Pr(x_3)'$ 0.18 (0.16); $Pr(x_4)'$ 0.25 (0.25); $Pr(x_5)'$ 0.28 (0.29); $Pr(x_6)'$ 0.13 (0.13); $Pr(x_7)'$ 0.02 (0.03); $Pr(x_8)'$ 0.001 (0.001).

And now we extend Pascula-Leone's theory and results: The information entropy H of a system of uncoupled particles distributed over one-particle quantum states s equals (Landau and Lifschitz 1958; Brillouin 1967)

$$H = \sum_{s} \sum_{n=0}^{\infty} p_s(n) \log_2 p_s(n)$$

Here n is the number of particles in the quantum state s and $p_s(n)$ the probability that the state s is occupied (here the response probabilities $Pr(x_1)$, $Pr(x_2)$,..., $Pr(x_8)$ where memory span becomes = the highest possible number of quantum states.

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TABLE 2

Quantum of action n, EEG power spectrum frequencies, psychological moment/s and their relationships with information entropy, energy content E and IQ

EEG frequency band number	EEG power spectrum rhythms	$E = n \cdot f$	Psychological moment/s	Memory span	Information entropy	$E = n^2 {}_2\omega$ $E = n^2 {}_{\pi\pi}$	IQ	
	(LIBERSON 1985)		(LEHRL et al. 1980)	(LEHRL et al. 1980)	1. (LEHRL et al. 1980)		(LEHRL et al. 1980)	
n	f Hz	kTln2	Hz	n	1 bit = 1 kTln2	kTln2	(mean; σ 100; 15)	unit
9	29	261	29	9	230	254	144	
8	23	184	25	8	181	201	139	
7	21	147	24	7	162	154	135	
6	17	102	18	6	109	113	118	
5	13	65	14	5	67	79	93	
4	10	40	10	4	44	50	78	
3	6.5	19.5	9	3	30	28	76	
2	5	10	3	2	11	13	65	
1	3.4	3.4	(2)	1	.	3	.	(. no data)
1	3.3 = ω ($\approx \pi$!)		2.9	1				Mean distance

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From this we can easily calculate for the sample of the 11-year-olds a mean entropy of 86.4 bits (equals an energy of 60.2 kT). In the tables by Lehrl, Gallwitz and Blaha (1980), we read for this age and mean IQ 119 (comparable to an adult IQ of 100) a STM capacity of 85 bits. Because Pascual-Leone's (1970) memory spans were idealized expectations and not normative values, this correspondence is very remarkable: Two completely different approaches lead on the absolute scales of entropy and energy to practically the same result. However, the latter result was obtained after applying quantum mechanics twice in series, for calculating Bose-Einstein statistics and entropy! M power, STM capacity, and *g* turn out to be synonyms.

And the meaning of this can be nothing else than that information eliciting particles behave as bosons in the sense of quantum physics (because they obey Bose-Einstein statistics).

One element of memory span (i.e. one packet of a defined amount of energy) n proves to be a direct equivalent of Planck's quantum of action h. When a particle flips from its higher energy state to its lower energy state it gives up this energy difference ΔE in the form of an electromagnetic quantum of energy. The energy ΔE is given by the Einstein relation (Landau and Lifschitz 1958)

$$\Delta E = n\, h\, f$$

where f is the frequency. As n increases, the wave length decreases.

And now we remember that EEG studies, correlating evoked potentials and IQ, have found from the beginning that high IQ subjects have more complex brain waveforms (Ertl and Schafer 1969) (from this derived the string measure by Hendrickson and Hendrickson 1980), higher frequencies (Bennett 1968), and — after fourier transformation — a higher energy content in the higher frequency bands (Ertl 1973). This is known to be a consequence of quantum number increase for the wave function of a quantum mechanical oscillator. For spectra of electromagnetic waves high-quality energy accompanies high frequency (Landau and Lifschitz 1958).

Already in 1938 Liberson (1985) had formulated a theory that all significant frequencies in EEG are multiples of one basic frequency of about 3.3 Hz. The number of these multiples is nine (Liberson 1985) as the maximum of memory span. When

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we assume these numbers one to nine to be the quanta of action (see Table 2) we make the fascinating discovery that the classical formulas of quantum statistics by Einstein ($E = hf$), Schrödinger ($E = n^2\omega$), de Broglie ($M = E/f$) and others (Landau and Lifschitz 1958) are valid both for EEG (Giannitrapani 1985) and psychometric test results (Lehrl, Gallwitz and Blaha 1980), based on Frank's (1960) theory. While the logic and meaning of Pascual-Leone's experiments may be difficult to understand, Tables 2 and 3 bear the convincing message: The brain has to be understood as one unitary macroscopic quantum oscillator. The importance of this simple sentence, in the light of our search for the creation of artificial intelligence, cannot be underestimated.

Empirical data (see Table 2 and 3) and theoretical considerations show that Liberson's (1985) basic frequency must be a bit lower than 3.3 Hz and must be 3.14 Hz, i.e., π. Because the frequency f can be expressed as $n\pi$, for the limit of mental speed follows $1/n\pi$. And the quantum number (i.e. memory span n) turns out to be the only reality which makes a difference. Note, that for the quantum numbers 1, 2 and 9 all the empirical data in Table 2 and 3 are relatively unreliable. (The bandwidth for EEG analysis was 2 Hz.) Given the span demand of a mental task, from the theoretical limits of mental speed, the expectations can be calculated by applying Bose-Einstein-statistics (Pascula-Leone 1970). Till now, we were not willing here to discuss, beside span and speed, a third variable, also heavily correlated with IQ and seen by Eysenck (1984) and coworkers (Hendrickson and Hendrickson 1980) as the very cause of IQ differences, namely error rate. High IQ subjects make fewer errors than low IQ subjects, and variance of test results decreases when IQ increases.

From the canonical ensemble of statistical mechanics it follows (Landau and Lifschitz 1958) that an increase in quantum number (span) is equivalent to an increase of the probability of density of energy states, i.e. the number of oscillators per unit energy (or frequency or wave vector) range. Consequently, variance and errors must decrease with higher quantum number. Will a deeper explanation of this relationship ever be given? To substantiate this in terms of biochemistry, we quote (Kometiani, Aleksidze and Klein 1982): "The suppression of acetylcholinesterase activity to 40-60% progressively increases the errors in the consecutive resolution" of an active avoidance task.

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TABLE 3

Relationships between quantum of action n, traditional EEG power spectrum frequencies, latencies of somatosensory and auditory evoked potentials, mental speed and IQ

EEG frequency band number	EEG power spectrum rhythms	Reciprocals of frequencies	6 studies average evoked potentials component latencies	Limits of mental speed	IQ
	(LINDERSON 1985)	(LINDERSON 1985)	(LINDERSON 1985)		(LEHRL et al. 1980)
n	f	1/f		$1/n\overline{n}$	
	Hz	ms	ms	ms	units
9	29	34	30	35	144
8	23	43	33	39	139
7	21	48	39	45	135
6	17	59	49	52	118
5	13	77	57	63	93
4	10	100	66	79	78
3	6.5	142	80	104	76
2	5	200	106	158	65
1	3.4	294	150	318	.

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If brain power (i.e. *g*) is the brain energy flow per unit time, then all three variables, span, speed and error rate, well-known for being highly correlated with IQ (Eysenck 1984), can be reduced to quantum mechanics.

In review, for this purpose, of dozens of imaginative explanations, we have come to the conclusion that only the theory advanced by Umezawa and coworkers (Ricciardi and Umezawa 1967; Stuart, Takahashi and Umezawa 1979; Leplae, Sen and Umezawa 1967) fits Pascual-Leone's (1970) experimental data. Umezawa et al. treat the brain as a mixed physical system in which the electrochemical part interacts with a macroscopic quantum ordered state responsible for the creation and maintenance of memory. In any macroscopic quantum ordered state cooperative modes appear as Bose-quanta (bosons). These bosons are not among the elementary physical constituents of the brain. They occur as dynamical products of the system, and result from the action of the quantum exchange forces. Each of these exchange particles is a boson and is observed as a wave which establishes and maintains a highly stable cooperative effect among the basic elements of the system. This wave feeds back to the element which originated the oscillation.

The ordered states are created by spontaneous rearrangement of the symmetry attributes. To occur this, a symmetry carrier within the brain dynamics itself must exist (Del Giudice et al. 1983) and has to be a quantum mode, otherwise stability is impossible. These symmetry-carrying agents are called Goldstone bosons and undergo Bose-Einstein condensation. In such a way information can be printed into the ground state. A characteristic of the asymmetric ground state (long-term memory) is that the ground state is a macroscopic manifestation of quantum mechanics, analogous to the domain structure of a ferromagnet. Figuratively speaking we may say that the brain consciously feels the presence of aligned vectors.

Besides the ground state the brain has states, excited by external or internal stimuli. The existence of these metastable excited states can be associated with STM. Whenever the system goes from the normal into this excited state generalized long-range Goldstone bosons appear, which will quickly die off (Sivakami and Srinivasan 1983).

This theory explains also why no specific substance (like DNS or antibodies in other biological memories) for informa-

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tion storage has ever been discovered in the brain, because information is printed into the asymmetry of its different constituents. Memory storage is a displacement from equilibrium, and this storage of order can be maintained only by supplying a continuous flow of ordering energy (Odum 1971). Probability is the reciprocal of the number of symmetric possibilities (Nicolis 1984). The principle of symmetry can be generalized to the principle of maximum entropy (Jaynes 1957), underlying both information storage and retrieval. Our brain has to be understood as a macroscopic quantum oscillator, where memory span provides the quantum number.

For a non-physicist the last page here may seem to be mere speculation. If this would be right, all modern physics, especially quantum field theory, relying heavily on symmetry breaking (i.e. group theory), is speculation. The paper presented here is a unique puzzle of facts and conclusions, and the difficulty for every reader will be that the arguments, at one point or another, go beyond his academic background. For a physicist the psychological or neurochemical data will be unknown, for a psychologist quantum physics and so on. Understanding and evaluating this paper needs a special effort by the reader to extend his knowledge and to read and comprehend some of the cited references and textbooks in the unknown fields. Without such an effort, a fundamental breakthrough, for which time is ripe, will be delayed.

The steam engine was invented about one hundred years before the advent of the theory of thermodynamics (i.e. entropy), telecommunication about one hundred years before information theory and information entropy, and how long will it be before mental ability testing (and the concept of intelligence) is illuminated by a generally acceptable theory?

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INTELLIGENCE AND NATIONAL ACHIEVEMENT

Editor
Raymond B. Cattell

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THE REPOSITORY FOR GERMINAL CHOICE: ORTHOGENETICS – THE OPTIMIZATION OF HEREDITY AND ENVIRONMENT

Robert Klark Graham
The Repository for Germinal Choice

The author describes the functioning of the California-based Repository for Germinal Choice, first conceived by the Nobel prize-winning scientist Dr. Herman Muller. Here the foundations for a potentially world-wide program are being laid, which could help to increase the distribution of genes for high intelligence without impinging on the mores of contemporary society.

It was Lewis Terman, the Stanford psychometrist, who first established conclusively that an entire cluster of useful qualities usually accompanies the gift of high intelligence. This cluster commonly includes superior health, sociability, longevity and earning capacity.(1)

Then Herman Muller, alert to the potentialities presented by Mendelian genetics, discerned a way to increase the distribution of genes for intelligence and other favorable qualities, without impinging upon the mores of our society.(2) He regarded this concept even more highly than he regarded his earlier research which demonstrated radiation-induced mutations and for which he received a Nobel award. The embodiment of his second great concept he termed the Repository for Germinal Choice.

The Repository is best understood from the viewpoint of its recipients. The usual recipients are couples who want children but are prevented from producing their own biological offspring due to the infertility of the husband – a condition which occurs in 4 to 5 per cent of the married population. A couple in this situation may adopt a youngster, or they may have a child of their own through artificial insemination by means of a donor (A.I.D.), in which case the wife experiences full motherhood.

Since the year 1980, however, childless couples have had a special recourse not previously in existence: This resource, the

(1) Terman, Lewis M. See the Terman Gifted Children Study in S.A. Mednick, M. Harway & K.M. Finello (eds.) Handbook of Longitudinal Research, Vol. 1. New York: Praeger Publishers, 1984.

(2) Muller, Hermann J. "What Genetic Course Will Man Steer?" in Man's Future Birthright. Edited by E.O. Carlson. State University of New York Press, 1973.

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Repository, can supply under liquid nitrogen the vital germinal material with which to make the wife a mother. The Repository makes no charge for the frozen semen. The insemination may be performed by a physician, or he may elect to teach the technique to the husband. The couple may choose the germinal donor from a variety of individual descriptions (hence the term: Germinal Choice). They are free to choose the qualities most significant to them, and in point of fact such couples have a wider choice in shaping their children's heredity than do other married couples. Since the child, or children, will spend a lifetime profoundly influenced by the genes of the donor (as well as those of the mother) the Repository undertakes to supply genes donated by Nobelists and outstanding young scientists who are unpaid and contribute out of enlightened generosity. These donors are willing to increase the distribution of genes which helped to make them outstanding in their lifetime. The probability of bright, healthy and creative children is thus maximized.

The Repository warns, of course, that recipients must not expect the offspring to be geniuses, but the mother does have the opportunity to bear the finest offspring possible for her.

Another category of recipient is couples in whom the husband, though fertile, has some serious hereditary deficiency which he is not willing to transmit to future generations. The Repository offers such couples a way to have children free from the husband's defect.

When one seeks donors who are high achievers in the hard sciences, one invariably encounters intelligent men. At present every donor has an I.Q. above 140, and the I.Q.s of donors range upwards to 190. Note that the Repository selects not for I.Q. but for achievement. This involves a cluster of qualities, always including intelligence.

It is important to remember that intelligence is second in importance only to sound health (for which the Repository selects rigorously). Intelligence is mankind's outstanding quality. It can be justifiably argued that between 60 to 80% of intelligence is genetically contributed.(3) Intelligence is the individual quality potentially most useful to our society, and intelligence can contribute substantially to the solution of some

(3) Vernon, Philip. Intelligence, W.H. Freeman & Company, 1979.

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of mankind's major problems. Perhaps it was for these reasons that Dr. Muller specified selection for intelligence as one of the primary objectives of his plan.

California is one of the great intellectual centers of the world. It has Stanford University, plus the many bases of the University of California, plus the California Institute of Technology, the Salt Institute, the University of Southern California and many other centers of advanced knowledge and research. At the latest count there are 20 Nobelists living in California. In addition, at least a hundred of the most creative younger minds of our time live and work in California. They are to be found at the Jet Propulsion Laboratory, Silicon Valley, the Linus Pauling Institute, the Rand Corporation, and a dozen other research organizations. The Repository takes advantage of the intellectual resources of the California area, but does not restrict its recruitment to California. In fact it has donors from as far away as Germany.

The Repository may be regarded as an interagent for increasing the distribution of genes such as those which were instrumental in producing the best minds of our era. But while germinal choice is primarily an hereditarian matter, the Repository recognizes that environmental concerns for the offspring are also essential. It requires that couples be married in an effort to ensure an appropriate social environment for the socialization of the child.

The society in which we live today is strongly environmentalist. It provides, among other things, extended education. It sanctions nuclear families. It provides modern clinical facilities for childbirth. Consequently the environmental concerns of the Repository are substantially served. We need only ascertain that the wife is in prime condition for motherhood, that the child will have parents to love and nurture him or her, and that the family can afford adequate housing and appropriate education. The Repository discourages the use of alcohol and alkaloids (nicotine, caffeine, opium) during pregnancy and lactation, since these toxicants are expecially punishing to the fetus and the nursling. Thus environmental factors are substantially optimized.

However, in our society it is still needful to recognize how entirely beneficial is good heredity. As of now we can say that it is possible to find outstanding, highly intelligent germinal donors who are free of significant hereditary deficiences and at

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the same time are robust and fully gifted with the cluster of desirable qualities which usually accompany intelligence.

It seems even at this early stage possible to say that these donors breed remarkably true, and that we can see evidence of what Dr. Muller would call genetic reliability.(2) Utilizing recipients as appropriate as possible to the donor material, the respository has produced (up to January 1986) a total of 22 offspring, and there are currently ten pregnancies. All offspring are currently at or under three years of age. Without exception, these are remarkably bright, healthy and happy youngsters. The parents love them and give them the best possible nurture. The husbands seem as pleased as the wives. One husband wrote: "I am pleased that you make it possible for our child to have some of my wife's characteristics." Two of the couples have already returned for a second child.

Evolving out of this ongoing experience has come the principle of orthogenetics: the optimization of both heredity and environment. Although not statistically significant, the early results are so impressively good that they justify the precept that, when engendering new humans, if both the environmental and the genetic factors are optimized the result will amost invariably be healthy, bright, competent and sometimes creative individuals.

It has long been assumed that this would be the case but it has not previously been demonstrated so consistently with humans. It has been rudimentarily demonstrated in plant and animal breeding, but not so convincingly as to lead to wide adoption for humans. Probably this shortcoming arises because, for one thing, with the breeding of livestock little consideration is given to the environment. By contrast, environment is more important in humans because of their longer period of childhood. For another, in stock breeding, attention is primarily given to one or a few characteristics (such as speed, milk-yield, meat-yield) with little consideration to mental faculties. This focus on one or a few narrow, and in our case irrelevant, advantages has tended to obscure the broader results which might be achieved for the benefit of mankind. The operation of the laws of heredity as manifest in human genetics is best gauged when the entire nature of the organism is considered.

With orthogenetics one need not compromise. One may have both health and intelligence to a maximum degree. In fact, the two are not only positively correlated, they are mutually

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reinforcing. Neither, it becomes apparent, is there any need for compromise between the objectives of heredity and of environment. Optimization of heredity can accompany optimization of environment. In fact it becomes increasingly evident that genuine optimization requires full concern for both.

The ancient contentions between environmentalist and hereditarians – still occasionally to be found – can be seen at times as an impediment to progress. Heredity and environment are two components in a single optimal. The synergism of the two produces offspring which come closer to our notions of human perfection than do the commoner practices of our society.

Although some pregnancies have resulted from a first insemination, there is no question that, statistically, more inseminations are required when frozen semen is utilized rather than is the case with fresh semen. This is hardly a matter of importance. Against this minor objection is the fact that the frozen sperm can be that of great men, even of some who are no longer alive. Also it can be the semen of relatively more outstanding individuals than those who may be locally on call to produce fresh sperm on demand. Superlative donor semen, frozen in liquid nitrogen, is part of optimization.

One should distinguish between genetic improvement – the selective multiplication of rare advantageous mutations – and the maximal avoidance of detrimental mutations which, when avoided, produces unimpaired, relatively advantaged individuals. The latter is the accomplishment of the Repository to date. It becomes ever clearer that reposing within mankind is a great richness of advantageous genes, if only we would not continually contaminate them with the 4 to 8 or more handicapping mutations which already have accumulated as a part of the "genetic load."(4)

In a very real sense it can be said that Hermann Muller's plan for increasing the distribution of genes for human intelligence and other valuable qualities is undergoing initial testing at the Repository for Germinal Choice. All evidence to date indicates that it is an entirely valid and valuable concept.

This pilot project is minuscule compared to its ultimate implications. Orthogenetics has progressed beyond the discussion phase and now constitutes a substantive step in the direction of innate progress for mankind.

(4) Buss, David M., Human Mate Selection, *American Scientist* V.73 January-February 1985, pp. 47-51.

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PERSONALITY CORRELATES OF LEFT-HANDEDNESS

HENRY H. REITER
C.W. Post College, Greenvale, New York

The California Personality Inventory was administered to 13 left-handed subjects and 13 right-handed college males and females. Left-handers were found to be significantly higher in socialization than right-handers. General support for the existence of personality differences between the two groups was not established.

Personality Correlates of Left-Handedness

Deviant personality characteristics have often been attributed to left-handed individuals. For centuries, the idea that left-handers are somehow both wicked and inferior has been so persistent and powerful that the word sinister – from the Latin for left – comes down to us as describing something evil and ominous.

About ten percent of the population is sinistral and scientists have been investigating left-handed subjects partly because of their different brain organization. However, the relationship between personality variables and handedness is largely unexplored. There has been a paucity of psychological investigations into personality correlates of left-handedness.

Differences between right-handed and left-handed individuals have previously been examined in various other contexts. A study of lateral eye movement, handedness and personality correlates found that left-handers scored significantly higher in trust, but lower in intelligence than right-handers (Etaugh, 1972). This was not supported by Hardyck, Petrinovich, and Goldman (1976) who investigated left-handedness and cognitive deficits. Their results strongly suggest that the hypothesis of no difference in intellectual and cognitive performance between right-handed and left-handed subjects can be accepted as true.

Laterality of limb and eye was studied and found not to be generally correlated by Porac and Cohen (1975). Investigating effects of handedness, Briggs and Nebes (1976) found a significant right ear superiority in both left and right-handed subjects. Family history showed no significant main effect on handedness in the same study.

Steingrueber (1971) in "Die Klinische Bedeutung der Linkshaendigkeit" found a significant deficit of left-handed ele-

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TABLE 1

Personality Correlates of Left-Handedness

	Lefthanders	Righthanders
Socialization	U = 45	U = 136
Tolerance	U = 52	U = 117
Social Presence	U = 116	U = 53
Self-acceptance	U = 113.5	U = 55.5

Mann-Whitney U values, a = .05.

critical value of U for a one-tailed test, $n_1 = 13, n_2 = 13$, U = 51.

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mentary students on the Bourdon Test (symbolic identification) as well as the tendency of left-handed girls to strabismus.

Experimenters are interested in learning disabilities and dichotic facial expression of emotions among other variables (Chipkin, 1979). Neuroscientists are examining if a brain location for handedness exists, according to Fincher (1979), but as yet this has not been established.

The present research is an attempt to delineate some aspects of personality function with regard to which left-handed individuals may differ from right-handed individuals. Research hypotheses were oriented toward the repercussions of left-handedness upon the individual's mode of adaptation to the social environment. Two hypotheses were tested, namely, that left-handed subjects would differ significantly from right-handed subjects in terms of social adaptation and tolerance. These concepts were identified as the scales of tolerance and socialization on the California Personality Inventory.

Method

Subjects. Twenty-six female and male university students participated in the research; 13 left-handed and 13 right-handed. Handedness was determined by the subjects self-rating and the hand used in completing the paper and pencil text. 55 were volunteers and ranged from 19 to 24 years of age. Eleven subjects in each group were female and two were male.

Materials. The California Personality Inventory was chosen to assess characteristics of personality that are widely applicable to human behavior and because it concentrates on the favorable and positive aspects of personality rather than the pathological.

Procedure. The test was administered individually to each subject in one one-hour session. Subjects received a general explanation of the study and were instructed to answer the questions in the test spontaneously.

Results

Mann-Whitney non-parametric tests of significance were employed to assess differences. Left-handed subjects scored significantly higher on the measure of socialization at $a = .05$.

The profile shows that the median score for tolerance of the left-handed population tended to be higher than that of the right-handed population.

Right-handers scored higher on the measure of social pre-

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sence. Conversely left-handers scored lowest on this scale. It should be realized that the differences in all variables except socialization were not significant and could be due to chance. General support for the existence of personality differences between handedness groups was not established.

Discussion

In support of the hypothesis, data interpretation indicates that left-handed subjects significantly differ from right-handed subjects on the measure of socialization. Although a significant difference was not found in support of the second hypothesis, the left-handers scores were shown to be higher than the right-handers ($U = 52$; $a = .05$).

Is this degree of social maturity an effect of being deviant and therefore developing tolerance and permissiveness towards others? Stein (1973) reported that left-handed individuals do experience more intense challenges to their sense of competency and, therefore, respond adaptively in personality style.

It is probable that future research will reveal additional personality variables which may be incorporated into a left-handed personality style.

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THE EVOLUTIONARY FUNCTION OF PREJUDICE

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The author examines the phenomenon of 'prejudice' and explains the possibility that its roots are not purely cultural. The proclivity for prejudice appears to be deeply rooted in the human psyche, and has been shown to be of distinct utility in furthering the process of speciation.

The sociobiological nature of 'prejudice' can only be clearly understood if we realize that the emotional tensions generated when diverse ethnic groups are forced into close geographical contact do not derive solely from contrasting cultural systems: they reflect deeply ingrained sociobiological mechanisms which serve an essential evolutionary function. Indeed, they are by no means of modern or even recent origin in the history of our species.

Like other animals, man is little more than a pawn on the chessboard of evolution. The basic patterns of human behavior and of human emotions had already been determined by evolutionary forces long before persons of diverse biological and cultural background were thrown together within the confines of densely populated modern societies. To properly understand the origin, nature and function of prejudice it is necessary for us to examine the biological role of the emotional tensions associated with "in-group" and "out-group" relationships – including racial relationships – in the evolutionary history of man. We must identify the evolutionary purpose of ethnic consciousness and of the sense of 'racial distance' that has tended to keep populations of diverse racial background genetically distinct from each other through hundreds of thousands of years of evolutionary development.

The Evolutionary Process

What do we mean by "evolutionary development"? Evolution is a process of organic change by which new forms of life are constantly arising and replacing others less suited to survive in a state of competition. The new concept of bio-social studies properly emphasizes the close relationship between the biological and social sciences, showing how even social behavior evolves under the selective guidance of a single arbitrating principle: the survival of the species.

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Evolution reveals two major trends, the first of which is a trend from the simplicity of unicellular life forms to the complexity of advanced organisms such as are represented by mammals, primates and men. The second is the trend from the primitive uniformity of early life forms to the rich variety of diverse species, sub-species, or, in the case of man, the diverse races which today inhabit the earth. Both trends – the trend towards increasing complexity and the trend towards increasing diversity of life forms – depend on the genetic isolation of discrete populations. In the case of simpler life forms, geographical distance by itself may be sufficient to ensure genetic isolation, but the higher more mobile forms of life require other defenses to prevent the accidental hybridization of evolving sub-species. Clearly, the evolutionary process would be frustrated if every new biological or evolutionary experiment, each new phylogenetic continuum, sub-species or race, were to lose its novel and distinctive combination of genes by admixture with sibling populations, or by the reabsorption of divergent sibling populations into the parental stock. In short, during the period in which emerging sub-species are evolving into separate species – so different from each other that they no longer have the biological ability to crossbreed – their genetic identity must be protected from crossbreeding by some form of barrier, either geographical or psychological, which will effectively prevent the negation of nature's experiments before they can even emerge as separate species and sub-species.

The important role of racial differentiation in the evolutionary process was clearly perceived by Dobzhansky as early as 1937, when he observed that:

> If (the) differentiation is allowed to proceed unimpeded, most or all of the individuals of one race may come to possess certain genes which those of the other race do not. Finally, mechanisms preventing interbreeding of races may develop, splitting what used to be a single collective genotype into two or more separate ones. When such mechanisms have developed and the prevention of interbreeding is more or less complete, we are dealing with separate species. A race becomes more and more of a "concrete entity" as this process goes on; what is essential about races is not their state of being but that of becoming. But when the separation of races is complete, we are dealing

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with races no longer, for what have emerged are separate species.

However, Dobzhansky continued:

> ....Races and species as discrete arrays of individuals may exist only so long as the genetic structures of their populations are preserved distinct by some mechanisms which prevent their interbreeding. Unlimited interbreeding of two or more initially different populations unavoidably results in an exchange of genes between them and a consequent fusion of the once distinct groups into a single greatly variable array. A number of mechanisms encountered in nature (ecological isolation, sexual isolation, hybrid sterility, and others) guard against such a fusion of the discrete arrays and the consequent decay of discontinuous variability. The origin and functioning of the isolating mechanisms constitute one of the most important problems of the genetics of populations.

As Dobzhansky added, genetic isolation becomes "advantageous for species whose distributions overlap, provided that each species represents a more harmonious genetic system than the hybrids between them."

Essential Feral Restraints

To prevent the negation of Nature's work of species-creation, we find that all higher more mobile animals living under feral (natural) conditions not only evolve a sense of territoriality, whereby they become isolated or at least semi-isolated genetically on a geographical basis in what are known as *demes*, but that they also develop what zoologists call "feral restraints," that is a marked unwillingness – amounting often to a positive refusal – to interbreed with members of other sub-species. These "isolating mechanisms" may be seen as "agents to ensure the mechanism that keeps them (the separate sub-species or races) on their peaks by preventing...hybridizing" (Paterson, 1978). To the extent that emerging species involve the selective development of new patterns of harmoniously interrelated genetic qualities, hybridization can be devolutionary in its impact, creating what S. Wright (1956) has referred to as "the formation of unharmonious constellations of genes."

The geographical isolation of separate sub-species or races, each in the process of evolving into disparate species, will often be sufficient to protect the evolutionary process from any

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genetic intermingling of the new "experimental" varieties before they have become sufficiently differentiated to be biologically incapable of miscegenation. But geographical separation is not always effective in the case of the more advanced mobile forms of animal life, and various "feral restraints" also customarily evolve to discourage cross-breeding on those occasions that individuals from divergent populations do chance to meet.

These feral restraints serve a vital evolutionary process. Zoologists have identified two types of such constraints, the first of which are called "built-in" constraints, based upon physical sign stimuli. "Built-in" physical constraints may take the form of distinctive shape, color, smell, or even patterns of movement, common to animals of the same sub-species, but absent from other populations. Such distinctive characteristics serve as a warning to members of related but disparate subspecies not to attempt sexual relationships. They are like a sign that reads "Danger! a new biological experiment is in progress. Do not approach!" (Simpson, 1964). But in addition to these built-in constraints, the distinguished zoologist, Peter Klopfer, (1970) has shown that acquired constraints exist among feral animals due to behavioral imprinting. These may be equated with the culturally-reinforced prejudices associated with "in-group" and "out-group" behavior among human beings.

Domestication Distorts Innate Behavior Patterns

Domestication, by breaking down territorial restrictions and destroying patterns of feral or natural activity, often results in perverted, misdirected, unnatural and anti-evolutionary behavior. The innate drives of domesticated animals generally express themselves in a confused and evolutionarily useless variety of patterns, while the behavior patterns of caged animals may become more extensively deranged. Not only do they often refuse to eat, but those that do eat may experiment with masturbation and homosexuality, or even seek to mate with animals of other breeds (Calhoun, 1962) – an activity which, regularly and consistently repeated, would necessarily negate any further speciation or racial diversification. Culture, particularly in urbanized societies, may likewise pervert human instincts by suppressing natural feral constraints and encouraging abnormal patterns of behavior, leading to similar distortions of normal biological behavior, such as homosexual-

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ity and the quest for abnormal erotic experiences, including those associated with inter-subspecific sexual experimentation. No human civilization has to date avoided collapse, and it is tempting to enquire whether social conditions which diverge too widely from the natural or feral conditions under which mankind evolved – and to which humankind is biologically adapted – may weaken the survival potential of over-domesticated populations by promoting anti-evolutionary life-styles, together with their concomitant reproductive abnormalities.

The Sociobiological Role of Prejudice

The sociobiological significance of prejudice becomes even more apparent when we realize that evolution arises not solely from individual competition. Team spirit and group cohesiveness have a high survival value for those mammals and primates which have adopted a pattern of group life. Furthermore, the concept of the survival of the fittest among social animals such as man refers less to individuals than it does to breeding populations and entire sub-species. Indeed evolution is concerned not with the individual organism but only with breeding populations, with phylogenetic continuua. Evolution involves populations, sub-species and species. Evolution is in no way concerned with the welfare or well-being of any one individual organism except to the extent that the death or survival of that organism may affect the gene pool of the breeding population.

Fitness also must not be misunderstood. In the evolutionary context – by which we mean the living reality – fitness means only the ability of any breeding population, sub-species or race to reproduce itself, and, at the more complex mammalian, primate and human levels, the ability of adults to protect their offspring until the offspring can in turn successfully reproduce themselves. Biologically, an individual is little more than a link in the chain of generations. The genetic integrity of the gene pool is therefore of paramount evolutionary importance. Evolution could not continue its work amongst the higher animals if each new experimental sub-species were to lose its identity before it had time to evolve into a new species.

The Importance of the Genetic Isolation of Races

Evolutionary competition is between rival sub-species. It is concerned with breeding populations, not with individuals as

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the Social Darwinists have too often erroneously assumed, overlooking the fact that Darwin specifically emphasized this when he chose to name his epic work *The Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life*. Indeed, cooperation at the primate and human level is aimed more at group survival than individual survival. Social cooperation in the primate troop and in the primitive human band arose as an evolutionary necessity to ensure the survival of the group as a distinctive phylogenetic breeding population. As G.G. Simpson (1964) has explained, the genetic isolation of races as emergent species is a matter of "great evolutionary significance." The genetic advancement of man arose as a result of ongoing competition for survival between genetically different, non-interbreeding hominid populations, and was sustained not merely by geographical isolation but also by developing bonds of cooperation and love within the kindred, and of suspicion, fear, antagonism, and even warfare against such alien groups as might become competitors for the territorial and material resources necessary to sustain life.

That the evolutionary struggle is commonly fiercest between closely related species, and particularly between sub-species who are dependent on and consequently competing for similar resources, was recognized by Dobzhansky, Ayala, Stebbins and Valentine (1977), who wrote:

> Related species compete for resources that both are in need of, and one species may outbreed and crowd out another . . .

In their earlier more feral existence at the level of the primate troop, the human band, and the human tribe, man's forebears consequently developed a capacity to distrust and repel those they perceived of as alien, as well as to love and to assist those whom they identified as allies. Every member of every human group has ever since experienced two different sets of reactions when dealing with others: one of loyalty towards members of the in-group, the other of caution and competitiveness towards members of the out-group. Ludwig Gumplowitz referred to these two separate sets of behavior as syngenism (attachment and loyalty) and ethnocentrism (suspicion of aliens). He further suggested that the pressure of competition from other groups tended to reinforce the feelings of loyalty and cooperation, heightening the consciousness of ethno-

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centrism and prejudice against "outsiders." These forces exhance the competitive viability of the group in its struggle to survive and to outbreed rival groups, and also serve to protect the ongoing process of homogenization within the group's own gene pool – a process which is itself dependent upon a high degree of genetic isolation.

Conclusion

These attitudes of in-group loyalty and out-group suspicion, which appear to have evolved long before the evolution of primitive human bands and to have developed more consciously identifiable form at the level of tribal and national societies, reflect a clear-cut evolutionary purpose. Patterns of racial and ethnic prejudice, of in-group loyalty and out-group suspicion, have served an effective evolutionary purpose over the long history of primate and human biological evolution, both in enhancing the competitiveness of the individual breeding population and also in preserving the uniqueness of its distinctive genetic heritage by discouraging interbreeding with the members of disparate sub-species. The evolutionary message is clear. Human groups which lose their internal sense of identity and cohesion in respect of other groups eventually cease to exist as discrete realities. Amongst the higher more mobile forms of animal life, isolating mechanisms such as prejudice are necessary to preserve the genetic identity of races and sub-species (as emergent species) by inhibiting miscegenation. A human population which practises endogamous marriage and strives to preserve the integrity of its gene pool should not be criticized as immoral. Such behavior implies that it is adhering to deeply rooted instincts essential to the evolutionary process, which process – from the point of view of purely logical, naturalistic thought – provides the only basis for any scientifically sound system of ethical philosophy.

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THE "LASCIVIOUS" WITCH

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The author shows how characteristics associated with the frequently benevolent goddesses and female spirits of European pagan mythology were reinterpreted, by association with elements from the Greco-Roman mystery religions, into the medieval image of the malignant and lascivious witch figure.

The lascivious witch is a manifestation of the demonization of women in medieval Christian culture and offers a sharp contrast to the idealized secular and religious figures of courtly women and the Virgin Mary, which were otherwise so characteristic of medieval European attitudes. The concept of female witches was not purely a product of the Middle Ages, but can be found in Graeco-Roman literature and religion, in Judeo-Christian culture, in Nordic mythology and in indigenous folklore. Although evidence of misogyny can be found in these cultures, it was under the influence of the Christian tradition that it became more pronounced, creating a new and blatant European misogyny that lingered for centuries.

Many works have been written on misogyny, and many on witchcraft, but the tendency has been to ignore the impact of the one upon the other. In pagan Europe, the feminine witch was historically a dualistic figure who could be benevolent or malevolent; following the advent of Christianity, she became demonized. The most exaggerated of her evil characteristics was her sexuality, which became taboo in the Christian tradition. She could ride on beasts, change into a beast, or copulate with a beast. Many texts describe how she would allegedly engage in orgies at the sabbath and have intercourse with the Devil, often in the form of an animal.

In 1335 a middle-aged woman of Toulouse, Catherine Delort, was tortured and burned at the stake as a witch. She confessed to having participated in orgies at the sabbath, where she also adored and copulated with a goat, and ate the bodies of children. In this alleged "confession" under torture, she espoused Catharist ideas and stated that God and the Devil were equal. By the 14th and 15th centuries, the witch was a carnal and heretical woman who allegedly engaged in obscene sacraments at the sabbath, which one could interpret as mockery of the Holy Communion. This concept of feminine carnality had roots in an earlier tradition.

Under Judeo-Christian influence, sexuality of an evil and

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seductive type had come to be regarded as a predominantly feminine trait by the Middle Ages. While the Celtic, Germanic and even Homeric cultures extended to women some measure of respect and dignity, Paul and Augustine regarded women with distaste, and scholars have largely overlooked the blatant misogyny of these two influential men who purported to follow and interpret the teaching of Christ. To these men of the early Christian Church, virginity and humility were the most desirable feminine traits. Women were excluded from ecclesiastical power, and few were canonized who did not die virgins. Sex was not only associated with women, but also with pagan fertility cults, more specifically, feminine fertility deities.

The origin of the lascivious witch was thus to be found in the interpretation given by Judeo-Christian theorists to elements present in Graeco-Roman and Germanic religion and in indigenous folklore. During the later Middle Ages, Christianity put a new emphasis on her malevolence, concomitant with the rise of heresy in the West. The Inquisition provided the fatal ecclesiastical authority which led to the torture of many innocent women.

The misogyny of the rabbinic tradition was reasserted by Paul even though Christ himself talked openly with women, had female companions and tended to emphasize the more positive qualities of women. Paul, more in harmony with the rabbinical tradition, citing Genesis 2-3, does not view women as equal, but as subordinate to man:

> ...a man...is the image and glory of God, but women is the glory of man. (For man was not made from women, but women is the glory of man. Neither was man created for woman, but woman for man.)(1)

Paul and the church Fathers did not view women as equal either politically or socially; and did not approve of women participating actively in church worship. Thus I Corinthians 14 states "...the women should keep silence in the churches. For they are not permitted to speak, but they should be subordinate ...it is shameful for a woman to speak in church." Within such a misogynistic tradition, it is therefore not surprising that women would be viewed as evil and sinful. The Talmud viewed Samaritan women as unclean because they were "menstruants from

(1) Elaine Pagels, *The Gnostic Gospels* (New York: Random House, 1979), p. 61. I Corinthians 11:7-9.

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the cradle."(2) For Paul, sex was sin, and women were the initiators of sinful lust in men. Although celibacy was the model lifestyle, Paul preached that it was better to marry than to burn (I Cor 7:9). The Genesis story could be seen as a symbolic seduction. Eve offers Adam the apple or sex. In the rabbinic tradition, the fall and sex are one. The snake wanted Eve. She eats the apple of sexuality. She tempts Adam to engage in sex.(3)

Equating women and sexuality was reaffirmed by the church Fathers, Augustine (4th century) equated sex and sin. Epiphanius of Salamis (4th century) stated that the Devil has a predilection for women over men, as women are unknowledgeable and concupiscent.(4) Nilos of Ancyra (5th century) stated that the look of a woman was a shot of poison. He warns men to escape the presence of women if they want to remain chaste, since their gestures and words lead to death. This Pauline-patristic view of feminine weakness in intellectual, physical, and moral spheres lasted for centuries and had a great impact on the medieval conceptions of women and witches. What was the origin of such a negative conception of women?

The promiscuous character attributed to the witches sabbath of the later Middle Ages has long since perplexed many historians. Some scholars have seen a link between the libertinism of the Gnostic sects in the early Christian era, and the witches' orgies ten centuries later. Gnosticism, however, was not a Western but an Eastern phenomenon, which bloomed in Alexandria in the second century. For 50 years it dominated Christian intellectual life, and spread to Italy, France, and Asia Minor.(5) One could, however, see the influence of Gnosticism (or the libertine elements associated with it) as a very indirect influence on European witchcraft, both geographically and temporally, in the guise of Manichaeism. Manichaeism was a Persian religion founded by Mani in the 3rd century A.D., who preached a dualistic interpretation of man and the world, a pessimistic view of the present coupled with the belief in the victory of light

(2) David Daube, *The New Testament and Rabbinic Judaism* (New York: Arno Press, 1973), p. 373.

(3) Bernice Kliman "Women in Early English Literature. "Beowulf' to the 'Ancrene Wisse," *Nottingham Medieval Studies,* 21 (1977), 40.

(4) Annette Kuhn, *Frauen im Mittelalter* II (Düsselforf: Schwann, 1984), pp. 50, 52, 53.

(4) W.H.C. Frend, *The Rise of Christianity* (Philadelphia: Fortress Press, 1984), p. 195.

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over darkness.(6) Scholars have interpreted the Albigensians (Cathars of southern France in the 13th century) as Manichaeans.(7)

During its developmental phase, Christianity took various forms however by the year 200 A.D. the established Christian church had become a hierarchy of bishops, priests, and deacons; any deviance from this one "true faith" was considered heresy, and there were many. Manichaeism appeared as a new Gnosticism, and in late antiquity was regarded as the most dangerous opponent to Christianity. In the early Byzantine church, Gnostic heresy was almost synonymous with Manichaean dogma.(8) Apparently, the differences between Gnosticism and Manichaeism were quite vague to the Christians even in the early Christian era, which would explain the confusion regarding the libertine character of both sects.

One of the most interesting aspects of Gnosticism, outside of its dualistic world view, was its openness towards women. Apparently, many women were attracted to Gnosticism because it treated them as equals to men and allowed them certain powers and privileges. Bishop Irenaeus speaks of the Gnostic teacher Marcus who had attracted "many foolish women." He purportedly seduced women by "telling them to prophesy" and he asked them to act as priests during the celebration of the eucharist.(9) Tertullian is incensed by such bold actions of women:

> These heretical women – how audacious they are! They have no modesty; they are bold enough to teach, to engage in argument, to enact exorcisms, to undertake cures, and, it may be, even to baptize!(10)

This passage is of particular importance for the study of feminine witchcraft because it not only alludes to the priestess and healer, but also emphasizes her aggressive and "masculine" behavior; a woman's role in the patriarchal tradition was to remain weak and submissive. Later Tertullian states that women should not take "a share in any masculine function – not to

(6) G. Widengren, "Manichaeism and its' Iranian Background," *Cambridge History of Iran III* (Cambridge: Cambridge University Press, 1983), p. 990.

(7) Henrik Samuel Nyberg, "Forschungen über den Manichäismus," *Der Manichäismus*, ed. G. Widengren (Darmstadt: Wissenschaftliche Buchgesellschaft, 1977), p. 3.

(8) Nyberg, p. 5.

(9) Pagels, p. 59. Irenaeus *AH* 1.13.5, 1.13.4.

(10) Pagels, p. 60. Tertullian, *De Prescr.* 41.

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mention any priestly office."(11)

Even at this early date (before 200 A.D.), women were viewed as heretics. Among some Gnostic groups, such as the Valentians, women were seen as equal to men; they acted as teachers, healers, and priests. Such equality was not encouraged by the Fathers of the Christian Church. When the Christian Church of the West became the dominant religious power, heresy and women were often grouped together. Women who went to Gnostic meetings were not described as priests , healers, or teachers, but as heretics and whores.(12)

Many sources on this "heresy" come from Augustine, whose influence on medieval Christian thought cannot be overestimated. His nine years as a Manichaean coincided with his young formative period; even after his conversion to Christianity he was obsessed with the problem of Manichaeism and its heresy. The longest of his anti-Manichaean works were the 33 books of *Reply to Faustus the Manichaean.*(13) Perhaps one of the most often quoted sources for the history of witchcraft is Augustine's *On the Customs of the Manicheans,* where he tells of a woman who went to a Manichaean meeting. When the elect came in, a light was extinguished, and one of the persons present would have forced her to sin, had she not screamed and escaped.(14) Other more irregular sexual practices are mentioned in *On the Heresies.*(15)

Although Augustine was a Manichaean in early life, his negativism makes his later testimony suspicious, and one tends to question the veracity of his stories in light of other evidence. The "elect" of the Manichaean sects were known to have observed three kinds of precepts or ideas. The third ideal was complete sexual chastity and renunciation of marriage. This aspect of the religious sect is difficult to reconcile with the charges of libertinism made against these people, such as licentious ritual orgies alleged to involve unnatural practices some of which may have been intended to prevent procreation – which was considered evil in that it prevented "the reassembling of light particles."(16) According to Augustine, Mani-

(11) Pagels, p. 60. Tertullian, *De Virginibus Velandis.* 9.
(12) Pagels, p. 60.
(13) Frend, p. 662.
(14) *De Moribus Manichaeorum,* Migne, PL 32, cols. 1374-1375.
(15) *De Haeresibus*, ed. and trans. Liguoir G. Müller (Washington, D.C.: Catholic University of Amercia Press, 1956), pp. 84-97.
(16) Widengren, p. 985.

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chaean meetings were not scenes of worship, but of illicit sex.

These alleged ritual orgies were not the only rites that the church Fathers disapproved of. Basilius and Augustine describe orgiastic dances of the 4th century in most vivid terms. These reports reveal a confusion of pagan and Christian religious elements: orgiastic dances at the graves of martyrs. Basilius refers to the women involved in these dancing rituals as whores.

> Holding God and his angels in contempt, they have exposed themselves shamelessly in the eyes of men. Tossing their hair and trailing their dresses, tripping with their feet, with lustful glances and unbridled laughter, they have flung themselves madly into the dance. They have... danced before the town at the graves of martyrs, turning the holy places into a stage to display their shamelessness ...They have gathered together a swarm of young men to watch them, whores that they are, and mad – greater madness were not possible.(17)

Augustine had a similar reaction to the defamation of the martyr Cyprian's grave. "Once, not many years ago, the dancers invaded this place with their impudence. This place, so holy, where the body of so holy a martyr lies...All night they sang impious songs and as they sang, they danced."(18)

John Chrysostom, a church Father of the late 4th century, equated dancing with the Devil's influence, and cited Salome's dance as an example: "The Devil helped her to please Herod with her dance and so to capture him. For wherever there is a dance, the Devil too is there."(19) Apparently, this heathen and predominantly feminine practice did not die out quickly. The synod of Rome in 826 condemned it:

> ...many people, mostly women, come to church on Sundays and holy days not to attend the mass, but to dance, sing broad songs, and do such pagan things. Therefore priests ought to admonish the people to come to church only to pray.(20)

Dancing and the rituals associated with it were a recurrent theme throughout the Middle Ages. It is very likely that the orgies mentioned by Basilius and Augustine and many others were part of a tradition that dated from the late Greco-Roman

(17) Basilius, Homilia XIV in ebriosos, I. Migne PG 31, col. 445f. Gerhard Zacharias, *The Satanic Cult* (London: George Allen and Unwin, 1980), p. 37.

(18) Augustinus, Sermo CCXI, 5. Migne 43, col. 14/15. Zacharias, p. 37.

(19) Migne PG 58, col. 491. Zacharias, p. 38.

(20) Russell, *Middle Ages,* p. 75.

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era or even from the pre-Indo-European culture; these beliefs were so tenacious that they survived well into late medieval times. The many attempts of the church to stamp out paganism were not entirely successful; even the fiercest efforts to abolish these heathen rites among the country folk failed. There is further irony in the fact that many of these pagan gods and goddesses were transformed into saints; an example being Saint Demetrius, who replaced Demeter and became the pagan saint of agriculture.

> But Eleusis knew, and still knows, a Saint Demetra, a saint who is unknown elsewhere and who has never been canonized. Until the beginning of the nineteenth century a statue of the goddess was ritually covered with flowers by the peasants of the village, for she insured the fertility of their fields.(21)

The cult of the saints and martyrs was merely a substitution for the cult of heathen gods and demons.(22) Certainly St. Martin, the object of Gregory of Tours' adoration, was well aware of the advantages of syncretism, as he built many churches on the old scenes of idol worship.(23)

From the sources of the later Middle Ages, it is obvious that the efforts of the church Fathers to stamp out "feminine heresy" were not altogether successful, as evidence from the former Roman province of Germania Inferior indicates. The chronicle of the Abbey of St. Trond describes a type of festival among the common people in the year 1133. A peasant near the town of Aachen with the help of friends built a ship's hull provided with wheels. It was then pulled by a crowd and taken to Aachen, Maastricht, Tongres, and Looz. Everywhere the ship went it was greeted with songs, dancing and lewd behavior (practiced by the women in particular). The abbot who reported this merry-making emphasizes the despicable pagan character and sinful nature of the rite.(24) The *Limburger Chronik* of 1374 relates a similar type of summer gaiety in the Rhine and Moselle region.

> ...and it got to such a pitch that more than five hundred dancers were found in the city of Cologne. And it

(21) Mircea Eliade, *A History of Religious Ideas* II (Chicago: University of Chicago Press, 1982), p. 415.
(22) Dill, p. 262. Frend, *Christianity*, pp. 709-710.
(23) Dill, p. 329, p. 329.
(24) Grimm, I, 214-217.

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> was found that it was a heresy, and that it was done for money, and some of them, men and women, fell into and committed fornication. And there in Cologne more than a hundred women and serving-maids were found who had no husbands. All of these were got with child during the dancing, and when they danced they bound and tied themselves around the body so that they became more slender.(25)

Feminine witchcraft might have left empty pages in history books if the church Fathers had followed the precepts of Gnosticism instead of the tradition of Paul, Augustine, and the Old Testament. Elements of the Graeco-Roman religion and mystery cults also survived to challenge Christianity and in the history of the witch, one sees a curious assimilation and negation of Graco-Roman traditions within the new Christian civilization.

Graeco-Roman influences in the Middle Ages were often viewed as pagan, particularly anything that hinted of sexuality. Augustine and Basilius looked upon fertility rituals as abhorrent; revelling was pagan and vile. Fertility deities were usually female, which was yet another link between women and sexuality. The goddesses Artemis, Hecate, and Diana, although not equal deities, had characteristics in common. Artemis was the untouchable virgin, the bow-bearing huntress, and goddess of death. She was also patroness of animals, virgin midwife and Gr *Kourotrophos*, the death- and life-giving mother goddess.(26) Hecate, like Artemis, was also called *Kourotrophos*, and she was seen as a helper. Classical vase paintings depict both Hecate and Artemis as torch-bearers. Hecate, however, was often associated with the demonic. Sacrifices of dogs reveal the emphasis on her sinister nature, as dogs were symbols for the chthonic.(27) Diana, the virgin huntress and protector of women (especially in childbirth) was also referred to as L *Latona, Luna* or *Trivia*. In documented history, Diana is almost indistinguishable from Artemis.(28) The similarities between these fertility deities could perhaps explain the confusion of the three in the medieval mind. Many sources of the Middle Ages speak of the goddess

(25) C.D. Vogel, ed., *Die Limburger Chronik* (Herborn: 1826), p. 71. Zacharias, p. 41.

(26) Konrat Ziegler and Walter Sontheimer, editors, *Der Kleine Pauly* (Stuttgart: Druckenmüller, 1964), 1, 618.

(27) *Pauly*, II, 982.

(28) *Pauly*, I, 1510.

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"Diana," especially in Gaul. It would be fallacious to think that the Diana of Merovingian Gaul is the same as the Roman Diana of earlier centuries. One must remember that sources describe Germanic and Celtic deities through an *interpretatio romana*, and that these Celtic or Germanic deities were "identified in popular syncretism with Diana."(29)

Perhaps the most popular fertility cult in the early Middle Ages was the cult of "Diana," which we must assume was the *interpretatio Romana* of similar Germanic or Celtic deities. This deity was mentioned in the secular and ecclesiastical sources from the 5th to the 11th centuries and shows the importance of the fertility deity in medieval civilization. St. Maximus of Tours describes how priests of "Diana" got worshippers drunk to prepare them for the cult. He adds that it is still going on among the peasants.(30) The *Life of St. Caesarius*, a text about the bishop of Arles early in the 6th century, mentions a demon whom the peasants call "Diana."(31) Gregory of Tours mentions a huge idol of "Diana" at Ivois near Trier, which the pagans worshipped as a god.(32) In Spain the sacrificial deities Hecate, Diana, and Minerva are mentioned because of their popularity with the peasants. Minerva apperas occasionally in later literature as a companion of or substitute for, Diana as the leader of the wild ride of women.(33) In the 7th century, the British missionary bishop St. Kilian was martyred when he tried to convert the eastern Franks from their worship of "Diana."(34) The *Life of St. Eli* speaks of popular worship of Neptune, Orcus, Diana, Minerva, and Geniscus, showing the tenacity of pagan beliefs.(35)

Diana was a deity associated with light. Her name has been interpreted as related to **Divia* "the illuminating one," derived from the stem of IE **deiwos (L diuus* "divine" ~ *Deus* "god," attested epigraphically as OL *deiuos*) which originally meant "luminous."(36) Diana has been interpreted as a moon goddess

(29) Samuel Dill, *Roman Society in Gaul in the Merovingian Age* (New York: 1966), p. 263.

(30) St. Max of Tours. Sermo XI in MPL LVII, 734.

(31) MGH Scrip. rer. merov. III, 491. Grimm, I, 237.

(32) Gregory of Tours. *Historia Francorum* VIII, 15. Grimm I, p. 237.

(33) Marcelino Menendez y Pelayo, *Historia de los heterodoxes españoles* I (Madrid: V. Suarez, 1880-1882), p. 235-264. Russell, *Middle Ages*, p. 303.

(34) *Acta Sanctorum*, 8 July, p. 616. Grimm I, p. 237.

(35) Migne, PL, 87, col. 528. Grimm, III, p. 402.

(36) A. Walde and J.B. Hofmann, *Lateinisches Etymologisches Wœterbuch* (Heidelberg: Winter, 1938), p. 360. Paul Kretschmer, "Dyaus, Zeus, Diespiter und die

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from very early times, as Cicero (De. nat. de. II, 68) explained: "Dianam autem et lunam eandem esse putant." Not only ancient literature, but also archaeological finds show Diana's lunar associations. Votiye offerings in the shape of vulvas, phalluses, and statues of mothers with suckling infants found near Nemi have connected Diana with a type of women's cult. The waxing and waning of the moon has long been associated with the monthly period of human females. This would explain the close correlation between the moon goddess and the great goddess of fertility because of the connection between lunar change and fecundity.(37) Thus, initially Diana was a moon goddess who later developed into the protectress of women and childbirth.(38)

This deity's importance to women has been documented by other ancient writers. Ovid related stories of processions of women with torches who went to Nemi on the Ides of August (Fast. 3, 263). Dionysus of Halicarnassus described a similar ritual celebration of the founding of the Aventine, which also took place on August 13. On this day, the women washed their faces and hands (Dion. Hal. ant. 4, 26, 5). Plutarch (Qu. Rom. 264c) spoke of a sanctuary of Diana in *vicus Patricius*, which forbade the admission of men. Such evidence points to a type of women's cult centered around Diana. Only later, during the Roman imperial period, did the Diana/Artemis cult of the maiden huntress become widespread.(39)

Hecate was a popular goddess who originated in Asia Minor.(40) Her name was an epithet of Artemis (Aesch., Supp. 676), which is not surprising as both of these deities were part of the lunar cycle. Whether they were originally the terrible and beautiful aspects of one goddess is not known, but they certainly represent two complementary aspects of being: life and death.

Diana's many attributes within the Roman pantheon, first as moon-goddess, then as goddess of childbirth and fertility, and later as goddess of the hunt, as well as her associations with

Abstrakta im Indogermanischen," *Glotta*, 13 (1924), 112. A Ernout and A. Meillet, *Dictionnaire Etymologique de la Langue Latine* (Paris: Klincksieck, 1959), I, p. 170.

(37) Mircea Eliade, *Patterns in Comparative Religion* (Cleveland: Meridian, 1963), p. 164.

(38) Kurt Latte, *Römische Religionsgeschichte* (Münich: Beck, 1960), p. 170.

(39) Latte, p. 173.

(40) Pierre Chantraine, *Dictionnaire Étymologique de la Langue Grecque* (Paris: Klinckseick, 1968), p. 328.

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Artemis and Hecate, show her syncretic value within the indigenous cults in Gaul. Because she had so many characteristics, it is clear that both Romans and the Roman Catholic Church (Gregory of Tours, Buchard of Worms), would confuse her with local deities possessing the same attributes. One could not, however, interpret this misnomer of "Diana" in Gaul to be a less valuable historical source. On the contrary, the longevity of "Diana" within the Middle Ages proves the importance of this deity in world religion; she was a manifestation of the close association of lunar, fertility, and feminine symbolism. Whatever her name in Gaul, "Diana" was a pagan goddess worshipped by the indigenous populations and condemned by the church. The attempts of the Christian fathers and officials to stamp out worship of this "nefarious" godddess were long and laborious, and, as folklore proves, not altogether successful.

The most well-known medieval texts concerning Diana and the wild ride of women are in two 10th century texts: the *Canon Episocopi* of Regino of Prüm and the *Corrector* of Burchard of Worms. Regino wrote the *Canon Episcopi* in 906 A.D. while working for the archbishop Radbod of Trier. This book was an eccelesiastical work meant to guide bishops when they visited their dioceses. The title *Canon Episcopi* derives from the opening phrase: *Episcopi episcoporumque ministri.* The passage concerning Diana is as follows:

> It is also not to be omitted that some wicked women, perverted by the Devil, seduced by illusions and phantasms of demons, believe and profess themselves, in the hours of night to ride upon certain beasts with Diana, the goddess of the pagans, and an innumerable multitude of women, and in the silence of the dead of night to traverse great spaces of earth, and to obey her commands as of their mistress, and to be summoned to her service on certain nights. But I wish it were they alone who perished in their faithlessness and did not draw many with them into the destruction of infidelity. For an innumerable multitude, deceived by this false opinion, believe this to be true and, so believing, wander from the right faith and are involved in the error of the pagans when they think that there is anything of divinity or power except the one God. (41)

(41) Migne, PL 132, col. 352-53. Translation: H.C. Lea, *Materials toward a History of Witchcraft* I (New York: Yoseloff, 1957), pp. 178-180.

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The *Canon Episcopi* is an important historical document describing 9th and 10th century beliefs. Burchard of Worms reproduced most of it in his *Decretum* and *Corrector*. These works were then taken over by later canonists such as Ivo of Chartres and Gratian and thus into canon law. It is certainly one of the more important texts in the history of witchcraft and its implications are many. Burchard's editing is of salient interest because he describes the leader of the band of riding women as "the witch Holda," and in another paragraph he calls her Herodias. Thus, the *Corrector* has combined Mediterranean and Germanic fertility figures. Holda has been interpreted as a fertility goddess of central Germany and leader of the *wilde Jagd*. As "Frau Holda" has survived in the areas of Thuringia, Franken, and Hesse, it is logical to assume that Burchard would use the name of a deity well-known to him. Grimm states that it is not unlikely that Frau Holda was known as early as the 7th century.(42) Herodias was the wife of Herod and a figure of medieval legend. Ratherius, bishop of Verona in the 10th century, complains that many people were claiming Herodias as queen or even goddess, and condemns those who believe that she ruled one-third of the world.(43) A combination of the two names Diana and Herodias: (H)erodiana is first mentioned in Vintler's *Pluemen der Tugent* in 1411.(44)

Holda could be seen as a chthonic deity of the underworld, or a more benevolent creature associated with the brightness of day. As with many witch figures, Holda's characteristics are dualistic: she can be terrifying or comforting. The word Holda is related to OHG *holdo* or "spirit." In Middle High German this word still had a positive connotation: MHG *die Guoten holden* were the "gentle spirits of the house." The term *hold* got its negative connotations in the use of *Unhold* by the church.(45) Holda has also been interpreted as a word related to *Hludana*, a West Germanic chthonic deity, whose name is related to ON *Hlóðyn*, or Thor's mother. Such an etymology emphasizes Holds's relationship to the underworld.(46) Other

(42) Grimm, I, p. 237.
(43) Ratherius, Praeloquiorum libri, I, 10, in Migne, PL 136, col. 157.
(44) Vintler, p. 260.
(45) Friedrich Kluge, *Etymologisches Wörterbuch der deutschen Sprache* (Berlin: de Gruyter, 1975), p. 314.
(46) Jan de Vries, *Altnordisches etymologisches Wörterbuch* (Leiden: E.J. Brill, 1961), p. 239.

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scholars see a relationship between *Hludana, Hlóðyn*, and *hold*, explained by Germanic **hilop awini*, the first part **hlopa* has been interpreted as legthened grade of *hold*.(47)

More recent evidence of the Holda figure is attested in the legends and fairy-tales of the Brothers Grimm. In *Kinder- und Hausmärchen* #24 she is described as Mother Holla. In legends #4, 5, 6, 7, 8, Frau Holle has many names (Holle, Holda, Hulda) and is related to similar figures such as Mother Perchta, who appears in legends #268, 269.

Mother Holla, like many witch figures of folklore, appears as either malevolent or benevolent. She can make barren women fertile, and newborn children are delivered from her well. She has fruits, cakes, and flowers in her underground realm, and dispenses gifts to those of her liking. She rewards hard-working girls at their spinning, but punishes those who are less diligent. Each year Mother Holla wanders around the countryside bestowing fertility on the fields; however, she can instill terror when she roams through the forests, leading a band of spirits. She is known to roam the most during the Twelve Nights of Christmas. Sometimes she is portrayed as a witch figure: the ugly old woman with a long nose and long teeth who scares children.(48)

A figure quite similar to Holda is Bertha or Perchta. She appeared in the Alpine regions of Bavaria and Austria and, like Holda, she roamed about during the Twelve Nights, but is particularly associated with the Eve of Epiphany, or the 12th night. Her name has appeared as early as the 9th century in Old High German in various words for the Twelfth Night: OHG *Giperahta Naht, perhtenaht,* and *Berhtag*.(49) The fact that Perchta and Holda were associated with the 12 nights of the winter solstice could betray more pagan origins. Like Holda, Perchta could be both malevolent or benevolent. She punished the less-diligent spinning maidens by cutting open their stomachs and filling them with straw. She was also the leader of the troop of lost souls. More benevolently, Perchta was thought to bring children gifts at Christmas time. The Holda/Perchta

(47) Kauffmann, "Dea Hluđana," 134-157. De Vries, *Wörterbuch*, p. 239.

(48) Brothers Grimm, ed. and trans. Don Ward, *The German Legends of the Brothers Grimm* (Philadelphia: Institute for the Study of Human Issues, 1981), p. 317.

(49) E.G. Graff, *Althochdeutscher Sprachschatz* III (Berlin: Nicolaische Buchhandlung, 1837), p. 209.

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figures manifest the transformation of a Graeco-Roman fertility deity such as Diana, into a figure of indigenous folklore.

The chronology of the belief in Holda/Perchta is problematic due to a dearth of sources. The richest literature is the Grimm legends recorded in the 19th century, but obviously dating from an earlier era. Ancient words for The Twelfth Night, such as OHG *Giperahta naht*, show us the name of Perchta dating as early as the 9th century. Burchard of Worms mentions "the witch Holda" in the 11th century document, the *Corrector*. Much more interesting evidence links Perchta with older pagan beliefs. *Perchtentag* (January 6) occurs within the 12 nights of the winter solstice, and could classify Holda/Perchta as a type of pagan deity associated with the winter solstice and the rebirth of the year.

The medieval figure of the lascivious witch was also influenced by the Germanic tradition. Freyja was a Nordic fertility deity who presided over the cycles of life and death, and like all fertility goddesses, engaged in erotic exploits. But Freyja's behavior was interpreted much differently by the pre-Christian pagan Germans than it was by the Germanic peoples of the Christian era. Christianity under the strong influence of the Pauline-patristic tradition and its misogyny, emphasized the negative aspects of female witches. Germanic legal and literary sources give copious examples of this negative attitude toward women following the advent of Judeo-Christian influences.

Of the many legal and literary terms for the witch in this era, the Latin word that best describes the licentious feminine element is L *striga*. This was probably the oldest word for witch and connotes a feminine apparition who killed and ate children and flew about at night. Although the practice of L *maleficium* or maleficent magic was a main occupation of the witch, the flying demonic spirit was emphasized. The glosses are proof of this: OHG *hagazussa* is glossed with L *furia* or L *striga* and not L *malefica*.(50) In fact, the differentiation between the two words was considered so important that King Stephen I of Hungary (997-1038) promulgated a legal distinction between L *strigae* and L *maleficae* and stated that *strigae* differed from *maleficae* in that the *strigae* rode out at night and fornicated. King Ladislas (1077-1095) grouped *strigae* with

(50) Joseph Hansen, *Zauberwahn, Inquisition und Hexenprozess im Mittelalter* (Aalen, Scientia Verlag: 1964), p. 7.

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whores.(51)

Women in the late Middle Ages were accused of having sexual intercourse with the Devil. This concept of women or witches fornicating with demons or the Devil has historical precedent and dates to earlier materials. Jordanes' *History of the Goths* states that the Huns were conceived by the union of sorceresses (*magas mulieres, Haliurunnas*) and evil spirits. In England, an example of intercourse between women and the Devil is taken from a 10th century Anglo-Saxon *Leechbook* which prescribes a salve against "women with whom the Devil has sexual intercourse."(52) The idea that heretics or witches had sexual orgies in their nightly conventicles dates back to the 11th century.(53) In the 13th century theologians wrote about the sexual relations between people and demons, and this coupling was usually ascribed to women rather than to men.(54) However, the notion that there was a ceremonial copulation of witches with the Devil does not become common until the 16th century.(55)

Not only the historical documents, but also the legal codes confirm the pairing of the word for witch L *striga* with the word for whore L *forniicaria, meretrix*. The *Lex Salica* 64.2 Codd. 6 and 5 compares a witch with a whore.

> Si quis mulierem ingenuam striam aut meretricem clamaverit [malb.] faras sicut superius diximus, in triplo componat.
>
> If someone accuses a free women of being a witch or a whore (glossed [malb.] *faras*), let him repay the same as stated above – threefold.

The *Edictus Rothari* cites a similar comparison:

> ...Si quis puellam aut mulierem liberam, qui in alterius mundium est, fornecariam aut strigam clamaverit . . .
>
> If somebody should call a girl or a free woman who is under someone else's guardianship a whore or a witch . . .

The plural word L *faras* in the Lex Salica relates semantically

(51) Hansen, *Zauberwahn*, p. 76-77.

(52) Storms, p. 245.

(53) Jeffrey Burton Russell, *Witchcraft in the Middle Ages* (Ithaca: Cornell University Press, 1972), p. 145.

(54) Hansen, *Zauberwahn*, p. 35.

(55) Russell, *Middle Ages*, p. 239.

(56) J.H. Hessels, *Lex Salica. The Ten Texts with the Glosses and the Lex Emendata, with Notes on the Frankish Words in the Lex Salica by H. Kern* (London: 1880), Notes, 263, col. 553. Niederhellman, p. 114.

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to both L *striga* and *meretrix*. *Fara* derives from OHG *faran* "to go, to travel" and means *die Fahrende* or "the one who goes."(56) In Middle Dutch the word *varende wijf* still has the double meaning of whore or witch.(57) To call a woman a witch or a whore was slanderous and had legal consequences.

Later, a *var* was interpreted as a type of witch assembly. A 15th century Tyrolian poet, Hans Vintler, refers to an assembly of women as a *var* (from MHG *varen* "to ride") and reports Tyrolian women who claimed to have attended a *var*, where at least 20 people rode out at midnight on calves, goats, cows, pigs, stools, and wardrobes in the company of Herodias, Diana, or Percht. Vintler believed that it is always the devil who takes the shape of women to ride out at night.(58) This 15th century document reveals the more fantastic capabilities of the medieval witch.

The concept of women riding out at night to perform nefarious deeds was common to literature in the Germanic world. Old English, Old Icelandic, and Old Norse texts prove interesting examples for this night-rider. OE *mare, mere, maerae* was the word for sorceress or incuba in Anglo-Saxon texts and is related to the modern English word nightmare. The *Leechbook* (2, 14, 12) refers to a cure for a *mare ride*, a witch or sorceress who can cause wounds or death by "riding" people at night. In another passage (2, 140, 9), the phrase *gif mon mare ride* states that "if a mare or a hag ride a man," precautions should be taken: "take lupins, and garlic, and betony, and frankincense, bind them on a fawns skin..."(59) *Leechbook* (2, 140, 9) groups the OE *nihtgenga* and the OE *nihtegenga* and the OE *mara(n)*. together. It prescribes remedies for the "night goblin visitors" and the "nightmare." Jente sees the OE *nihtgenga* as a literal translation for the term nightmare: something that wanders at night, the night wandered or spook.(60)

A description of feminine riders, ON *túnriða* or witches appears in the *Hávamál* 155.

> That tenth I know, if night-hags sporting
> I scan aloft in the sky.

(57) Verwijs and Verdam, p. 1265.

(58) Hans Vintler, *Die Pluemen der Tugent* (Innsbruck: Wagner, 1874), vss. 7737, 7952, 7993, 8023, 8168. Hansen, *Zauberwahn*, p. 406.

(59) Ed. O. Cockaye, *Leechdoms, Wordunning and Starcraft of Early England* 3 vols. (London: Longman, 1864-1866). Richard Jente, *Die Mythologischen Ausdrücke im Altenglischen Wortschatz* (Heidelberg: Winter, 1921), pp. 125-127.

(60) Jente, p. 126.

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I scare them with spells, so they scatter abroad,
heedless of their hides,
heedless of their haunts(61)

This stanza is taken from one of the magic charms of the *Hávamál*. The speaker of spells or incantations can cause the witches to forget both their original forms and their homes. "Heedless of their hides" suggests that they leave their own "skins" or forms behind on their rides; this is a reference to shapeshifting. Witches in the later Middle Ages were accused of riding out at night and changing their shapes into animal form. Such power was attributed to the Devil's assistance.

Even legal evidence exists for such a notion. The older law of western Gotland (c. 1170) states that it is slanderous to accuse a woman of riding on a staff with her hair down in the shape of a troll (*i trolls ham*). Thus, witches were seen as either riding on strange animals, or changing their shapes into these animals.

A counterpart to the ON *túnriða* of the *Hávamál* is the ON *kveldriða* of the *Eyrbyggja Saga*. In this Icelandic saga, Gunnlaugr has apparently been "ridden" by the sorceress *Geirriðr*; he is mysteriously attacked while coming home one night. His father finds him stretched out unconscious in front of the door of the family home, badly bruised and bloody, and his skin is ripped off the bones. *Geirriðr* is sued and accused of being a *kveldriða*. Thus, anyone encountering one of these witches or *kveldriða* on their nightly rides could be severely wounded or even die.(62) Other synonyms for ON *kveldriða* (evening rider) are ON *myrkriða* (dark rider) and ON *trollriða* (magic rider). Later versions of these words in Germanic territory are MHG *zûnrite* or fence-rider, and LG *walrîderske* or wall-rider.

Freyja, one of the major fertility goddesses in the Scandinavian pantheon, could also be represented by Christians as a lascivious witch figure. She slept with Oðinn, her brother Freyr, and various other beings. Both she and her brother rode a swift boar, whose golden bristles shone bright in the night. She was the practitioner of a very potent form of magic called ON *seiðr*. Freyja was not a nefarious deity in Scandinavian religion,

(61) Lee M. Hollander. *The Poetic Edda* (Austin: University of Texas Press, 1977), p. 39.

(62) Francois-Xavier Dillmann, "Katla and her Distaff: An Episode of Trifunctional Magic in the Eyrbyggya Saga," *In E. Polomé (ed.), Homage to G. Dumézil — Journal of Indo-European Studies* Monograph 3 (Washington, D.C.: 1982), p. 114.

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and was not interpreted as such by the pre-Christian pagan Germans. Christian officials, however, condemned the behavior of any pagan fertility deity, especially Freyja. Hjalti Skeggjason, a Christian chieftain, deliberately denigrated the pagan deities at the Allthing in Iceland in 999 A.D. Of Freyja he said: "I don't want to blaspheme the gods, but I think Freyja is a bitch!"(63)

Freyja was also known for riding on beasts. She rode astride a boar; but she was also associated with other animals such as cats. Ancient bards called her "cat-master," and the wagon which she rode was pulled by felines.(64) Her strong affiliation with cats may probably be related to the blatant sexuality of these creatures. Freyja's sexuality has been described in various sources. "All *Æsir* and alfs within this hall thou hast lured to love with thee" states Loki st. 30.(65) Other writings reveal a more primitive description: "In the night [thou] runnest as Heithrun in her heat among the he-goats. Wert ever eager with Oðr to lie; under thy apron still others have crept" (*Hyndluljóð*, st. 30-31).(66) Freyja does not shun incest either, Loki describes her fraternal relations in *Lokasenna* st. 32: "in thy brother's bed the blessed gods caught thee...."(67)

Christian ethics would describe Freyja's behavior as debauched, although her sexuality was quite characteristic of fertility deities. Such deities preside over the cyclical patterns of life and death, procreation being an important part of the pattern. Many of her erotic adventures were instigated by the gods, who often used her as a pawn in their negotiations with the giants. Freyja practiced a form of Vanic magic *seiðr*, which was disdained by the *Æsir*. Her sexuality and skills in *seiðr* could easily associate her with the western European witch. But there is yet another similarity that makes an interesting parallel with medieval witches. Freyja, like Freyr, was closely associated with the pig, and occasionally she would take the shape of a sow (*sýr*). This is similar to the medieval idea of shapeshifting; women in the later Middle Ages were often accused of changing themselves into animals (usually ones such as cats or pigs) and flying out at night. The *Hyndluljoð* st. 5 mentions Freyja's

(63) "Vilkat goð geyja: grey pykkjumk Freyja!"
(64) Ström and Biezais, p. 151.
(65) Hollander, *Edda*, p. 96.
(66) Hollander, p. 135.
(67) Hollander, p. 97.

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boar, *Hildisvíni*, or "battle swine" on which she rode "on the road to Valholl."(68)

Freyja, like the other pre-Christian pagan goddesses Diana, Artemis, and Hecate, was a fertility deity whose sexuality was emphasized during the Christian era in a negative context, and in association with feats of magic such such as shape-shifting, flying, and riding beasts.Unfortunately, the medieval witch figure did not remain in the realm of mythology but, became a reality affecting thousands of women. This development eventually led to witch trials of a ridiculous and cruel nature, such as that of Catherine Delort in 1335.

The witch persecutions manifest a misogynistic, rabbinical fear of sexuality, which was initially a tool and later became a weapon unleashed against medieval women. Although lasciviousness was only one characteristic of the multifaceted sorceress, it was exaggerated by the Church to suppress an all too lively paganism in a flourishing misogynistic patriarchal culture. But time is laden with paradoxes, of which there is one here. The Roman Catholic Church in its early efforts to triumph over paganism had taken over quite a few of the ritualistic features of the pagan religions.(69) The later ecclesiastical efforts to stamp out witchcraft could not eradicate this feminine figure who — perhaps through such repression — grew even more charismatic in the popular folk imagination.

(68) Hollander, 130-131.

(69) For further information on paganism in Christianity see also: Robert Wilken, *The Christians as the Romans saw Them* (New Haven: Yale University Press, 1984), pp. 200-201. Jaroslav Pelikan, *The Emergence of the Catholic Tradition* (Chicago: University of Chicago Press, 1971), pp. 33-34.

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WOLF DANCERS AND WHISPERING BEASTS: SHAMANIC MOTIFS FROM SUTTON HOO?

STEPHEN O. GLOSECKI
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Contrary to the recent academic trend which has made it fashionable to overlook or deny evidence of the persistence of pagan influences in Anglo-Saxon culture and to interpret it "through stained glass windows", the author explores the "Scandinavian connection" implicit in the decorated aurochs' horns found in the Sutton Hoo hoard.

The aurochs horns – barbaric drinking vessels set incongruously beside a sumptuous dish of delicately etched Byzantine silver – seem to be out of place in the Sutton Hoo hoard. For East Anglia and the other Anglo-Saxon kingdoms in the first quarter of the seventh century, the Anastasius dish was a sign of the times to come, of the ongoing cultural changes initiated by Augustine's mission a generation before Rædwald's barrow was heaped up on the north bank of the River Deben. The Anastasius dish, the ecclesiastical spoons, the stock of cross-marked bowls, all anticipate the fast-paced process of conversion that drew Germanic Britain progressively closer to the Mediterranean center of the medieval world.(1)

But the aurochs horns are hold-overs from the old hoards of the pre-Christian northern kings. Their silver-gilt mounts reflect a high level of metallurgic skill, although the mounts are mainly surface ornaments on an artifact that is essentially the horn of the beast. Like the dancing-warrior figures on the helmet and the man-between-monsters motif on the purse-top, these horns connect the Bretwalda buried at Sutton Hoo with his ancestral home on the shores of the Baltic Sea, where images of horns and horned men were already very old before the westward migrations began in earnest after the withdrawal of Rome's last legions in 407 A.D.

Long before the Roman occupation of Britain went forward under Claudius, Julius Caesar described the honorific use of

(1) My main sources for Sutton Hoo materials are Bruce-Mitford's books; generally, I apply without question his theories regarding such details as the identity of the king buried at Sutton Hoo. For detailed support of these theories, see the two Bruce-Mitford books listed with the references cited.

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aurochs horns among the Germani (Bruce-Mitford, *Handbook* 55):

> A third species is that which they call aurochs. These are somewhat smaller in size than elephants, and are like bulls in appearance, color and shape. Great is their strength and great is their speed, and once they have spied man or beast they do not spare them. These the Germani capture skillfully in pits; and their young men harden themselves by such labor and exercise themselves by this kind of hunting. And those who have slain most of the beasts bring the horns as evidence thereof to a public place and win great fame. The animals, even if caught very young, cannot be tamed or accustomed to human beings. Their horns differ very much from those of our oxen in size and shape, and kind. The Germani collect them eagerly, encase their edges in silver, and use them as beakers at their most magnificent banquets.

As Bruce-Mitford points out, the honorific use of aurochs horns in seventh-century East Anglia reflects a tradition that "had survived for seven centuries from Caesar's day" (*Handbook* 57). But Northern Europeans had been using aurochs horns as drinking vessels for centuries before Caesar introduced the practice to history, so the tradition preserved at Sutton Hoo could be considerably older than *De Bello Gallico* (Shetelig 317).

Further, the verses describing the aurochs in the Old English *Rune Poem* suggest that vestiges of the tradition persisted, like the runes themselves, long after the conversion:

(ur) byþ anmod	and oferhyrned,
felafrecne deor	– feohteþ mid hornum –
mære morstapa;	þæt is modig wuht!
	(Halsall 86)
(the aurochs is single-minded	and horned above,
fiercest wild beast	– it fights with horns –
renowned moor-stepper;	that is a headstrong creature!)

Here it is significant that Halsall dates the *Rune Poem* to the second half of the tenth century, for this late date implies that ancient continental attitudes toward the aurochs persisted throughout the Anglo-Saxon period. It is also significant that the poet mentions the animal's horns twice in just three lines; obviously, he recognized that all the aurochs' strength bore

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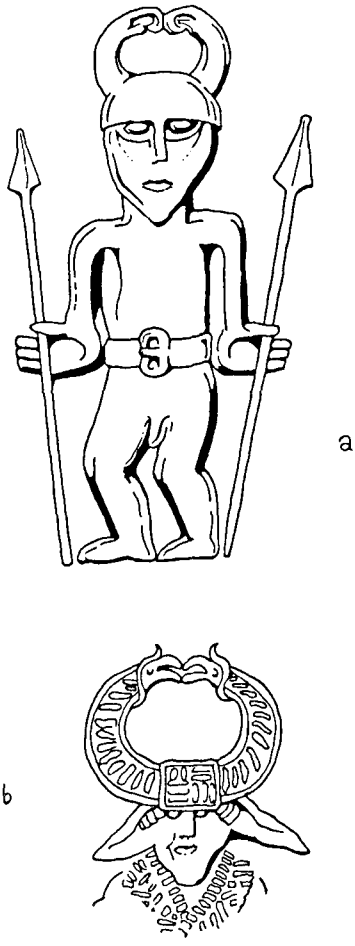

Fig. 1a: The Finglesham Man, after Hawkes fig. 1. Fig. 1b. Head of Sutton Hoo horned dancer, after Hawkes fig. 2.

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down on the points of its horns. The repetition here implies that, in the mind of the poet, the horns were the animal's single most important attribute. With a sort of sympathetic synedoche, the part stands for the whole; the horns by themselves signify the strength of the entire aurochs, the most formidable wild game in Iron-Age Europe, with the possible exception of the bear. The poet – or the scribe who recorded the poem – may never have seen an aurochs in the wild, especially if he were a monk who devoutly observed Benedict's *Regula Monasteriorum*. Yet his description singles out the attribute most important to the early Germanic hunter. The tradition described by Caesar and commemorated at Sutton Hoo also implies that the horns embodied the power of the whole animal, and were therefore preserved in the regalia of kings. This power, associated with the horns of the beast, gathers importance as we turn to other artifacts unearthed at Sutton Hoo.

As manifested in the images of horned men on the helmet, this power connects the early seventh-century East Anglian court with contemporary Upplandish society, and may well have shamanistic implications. Many societies associate animal horns with magical power, but horns and dancing warriors are not the only figural images from the hoard that seem best understood in the context of magic, for the man-between-monsters motif also lends itself to a similar interpretation.

In Anglo-Saxon studies today, it remains unfashionable to sift through the extant art for vestiges of the native beliefs of those insular Germanic settlers who eventually became the English. Many Anglo-Saxonists are still over-reacting against the romantic criticism of the nineteenth and early twentieth centuries, when scholars searched eagerly for evidence of the survival of pagan, pre-Christian components in post-conversion Anglo-Saxon society. Partly for this reason, Augustinian approaches to the literary corpus have held sway ever since the early fifties, but the older archaeological evidence – the horned dancers and the men among monsters – can only be misconstrued if interpreted, like the later literature, in terms of Christian iconography. Thus the predominant Augustinian approach to the whole range of Anglo-Saxon art puts us all, to press David Hill's apt phrase into the present context, "in danger of seeing Anglo-Saxon England through stained glass

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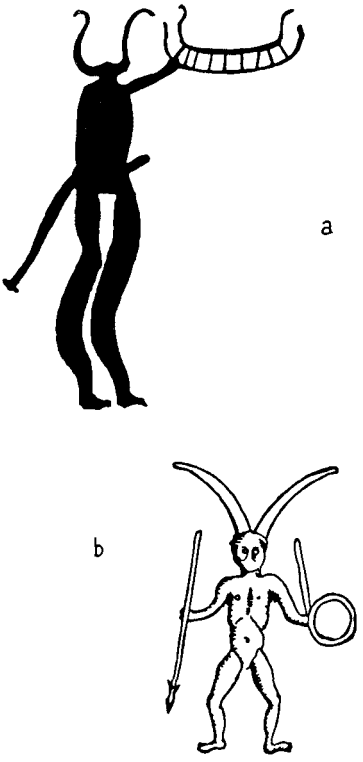

Fig. 2a: Bohuslän petroglyph, after Gelling and Davidson fig. 29a. Fig. 2b. Detail of the runic horn from Gallehus, after Gelling and Davidson fig. 83.

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windows" (*An Atlas of Anglo-Saxon England* 23).

Perhaps because he recognized this danger, Bruce-Mitford changed his stance on the interpretation of the man-between-monsters plaque from the Sutton Hoo purse-top. Originally, he viewed this design as an insular version of the Frankish Daniel in the Lion's Den motif; more recently, however, he writes that this intriguing figure is most likely "a further instance of the Swedish connection with Sutton Hoo" (*Handbook* 111). To me, the phrase "Swedish connection" is especially compelling, partly because mid-century literary criticism, by and large, mainly acknowledges the "Roman connection," and partly because the phrase is vague enough to conjure up a whole crowd of questions regarding the shared traits of East Anglian and Upplandish culture after the end of the great Migrations. Of the many conceivable questions, I have singled out this one: do the figural motifs shared by the East Anglian and Swedish Vendel-style artifacts suggest that these Germanic peoples on both sides of the North Sea still believed in their ancient cult of shamanistic magic?

I believe that images of horned dancers and men between monsters stem from common Germanic beliefs in magic, which were reflected in the art if not retained in the culture. Whether Rædwald's thanes actually called on magicians to heal their hurts and harm their enemies does not really concern me; even if they did not, their not-too-distant ancestors did. This is the significance of the horned dancers and the whispering beasts: they reflect a Germanic system of genuine magical symbology, perhaps wholly archaic in seventh-century East Anglia, but, then again, perhaps still wholly current in the midst of the Christian mission.

The horned man appears in Northern European figural art during the Bronze Age, as a cult figure associated with some form of religious practice. The Bohuslän dancer represents an entire class of petroglyphic horned men [fig. 2a], probably produced by the culture that developed in southern Scandinavia after the invasion of the Battle-Axe People (Gelling and Davidson). Some scholars suggest that it was the Battle-Axe People who brought Indo-European languages into Northern Europe (e.g., Baldi 13-14, Glob 121, Shetelig 72); others believe that as Indo-Europeans, the proto-Germanic peoples were linked to the horse-riding Indo-European warriors of the Kurgan culture of the West Eurasian steppes. Whatever his dim origin, the horned

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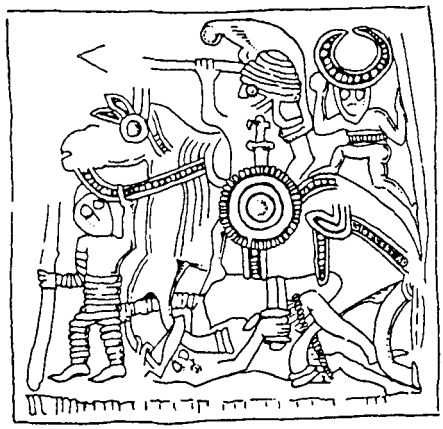

a

b

Fig. 3a: Scene from Valsgärde helmet (grave 8), after Hawkes pl. 3b. Fig. 3b. Torslunda die, after Hawkes pl. 3a.

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man has a long prehistory in the north; his appearance in Iron-Age Germanic art implies an unbroken magico-religious tradition going all the way back to the Bronze Age. Like the honorific use of aurochs horns described by Caesar and attested by the Sutton Hoo specimens, the related use of horned-man imagery represents a northern tradition already very old by the early seventh century.(2)

One figural scene in particular [Fig. 3a] – an ornament on a Valsgärde helmet – strongly suggests that this tradition was shamanic. This Swedish horse-and-rider motif finds direct analogues on the Pliezhausen bracteate (Arent pl. 27) and on the Sutton Hoo helmet, in a decorative panel distinct from that depicting the two dancers (Bruce-Mitford, *Handbook* 50). In the Valsgärde version of this well-known configuration, the small horned man behind the rider looks like a shaman, identified by his horns and by the fact that he is controlling the rider's spear. This figure may represent the spirit of a shaman who is helping the rider with war magic; he may be a concrete representation of an abstract spell; or he may be a depiction of Odin himself, god of ecstatic poetry, of sorcery, and of war. A number of writers have noted Odin's shamanic associations (e.g., Chadwick 9-10; Davidson, *Gods and Myths* 142ff.; Polome 62; Shetelig 415-16; Speake 82); the eddic poem *Hávamál* clearly gives Odin power over weapons in combat (Terry 36):

> I know a fifth [spell]: in battle's fury
> if someone flings a spear,
> it speeds not so fast but that I can stop it –
> I have only to see it.

The surrounding verses also say that Odin can blunt swords and protect his chosen warriors in combat; therefore, this small apotropaic figure may depict the Germanic god, a master of magic, whose own mythic weapon was the spear Gungnir, to be trained on Fenrir at Ragnarök.(3) But even if they do not represent Odin himself, the horned figures that typically appear on armor, most often on helmets, suggest that the man who wore such images into battle believed that they contained

(2) Cf. Shetelig's assertion that "the symbolism of the bronze age and the figures associated with it were still preserved many hundreds of years after the beginning of the iron age" (162).

(3) Of course Odin's association with war magic, with binding and blinding warriors, is common knowledge in Germanic studies. The very etymology of his name – a matter of dispute originating with Adam of Bremen's statement, *Odin, id est*

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magical powers, powers possibly seen as the gift of Odin.

The horned dancers from Sutton Hoo are related to similar figures from both Britain (the Finglesham man [Fig. 1a]; the Caenby man [Bruce-Mitford, *Aspects* pl. 54b]) and Sweden (esp. see Arent's plates). These figures imply a uniform tradition spread throughout the Iron-Age Germanic world – a tradition that bestowed special magical powers upon the struggling hero. Perhaps the most striking Swedish parallel is the spear dancer on one of the widely published bronze dies from Torslunda, Oland [Fig. 3b]. The dancer wears a horned helmet; as on the Sutton Hoo and Caenby analogues, the horns have bird-of-prey terminals, which may represent another link with Odin, for ravens and eagles are frequently associated with the war god. But here we should add that, as Arent repeatedly asserts (132, 142-144), these figures may simply represent a generalized belief in war magic, and need not be associated with any particular mythic character. Armed with two spears (angons?), the Torslunda warrior – a Migration-period figure who may antedate the cult of Odin – consorts with a wolf-headed companion who carries a heavy spear thick as a post.

This Swedish wolf figure prompts me to call the Sutton Hoo analogues wolf dancers, too – for a very specific reason. A close look at their heads reveals two downswept triangular projections below the horns [Fig. 1b]; the corresponding Torslunda figure, portrayed with the wolf-headed man, has similar projections. In different sections of the same paper, Hawkes calls these things "flaps or cheekguards" while Davidson says that "the two protruding pieces below the horned head-dress suggest

furor – may denote shamanic ecstasy (Óðinn <ON *óðr* "possessed, frantic" [Shetelig 415]; 'poetry" [Opland]). Opland's treatment of this etymology is probably the best currently available (28-30). If this small horned figure from Valsgärde does represent Odin, then, contrary to Davidson's opinion that he is *guiding* the rider's spear ("Horned Helmet" 25), it would be more characteristic of this hostile god to be restraining the weapon, to be hindering rather than helping. This would correspond with the action of the prone figure stabbing the horse from below. The imagery of attack makes this rider especially vulnerable; therefore, he probably represents the enemy rather than the man actually wearing this ornament on his helmet. Mentioning others who have discussed this configuration, Arent emphasizes Odin's unreliability, which prompts her to exclude him as the referent of the horned man. But, even though Arent is quite right to point out that these figures need not stand for any particular mythic characters, if this rider does represent the enemy, then Odin – or Odin's war magic – may nonetheless be the referent of the Valsgärde horned man. This would corroborate Davidson's opinion that these horned men brandishing spears have some connection with the cult of Odin ("Horned Helmet" 24-26, *Scandinavia* 122, 130; cf. Graham-Campbell 154).

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that this man is wearing some kind of hat rather than a helmet" ("Horned Helmet" 23). This problematical interpretation can perhaps be solved by regarding the projections as stylized wolf ears, drawn rigidly downward just like the ears of a dominant male wolf on the attack (cf. Lopez 44-45). The resemblance to wolf ears is still more striking in the headgear of the Caenby figure, contemporary with Sutton Hoo, from a Lincolnshire site just over the Wash from East Anglia (Bruce-Mitford, *Aspects* pl. 54b). The association of these wolf dancers with the Norse *úlfheðnar* tradition is inescapable; apparently, the *úlfheðnar* and *berserkir* believed that they were transformed into the likeness of wolves and bears when the battle frenzy overcame them (Arent 137-138; Pettitt 532-533). This sort of frenzy — where the man falls into a violent trance-like state during which he believes he becomes a beast of prey capable of annihilating tribal enemies — can be likened to Siberian shamanic practices.

The well-known climax from *Hrólfs Saga Kraka* argues strongly in favor of the shamanic interpretation of these wolf and bear warriors. In this scene, Hrolf's hero Boðvar Bjarki ("War-wolf Little-Bear"; Pettitt 530) falls into a deep trance during the king's last stand at Leire. While Bjarki is entranced, a huge bear appears in the van of the Danish army, devastating Hrólf's enemies. When Bjarki the bear hero is forcibly awakened, his ursine ally disappears at once, and the Danes then fight on vainly, down to the last man. This scene makes best sense if the entranced Bjarki is conceived of as the prototype of the *berserkir*, sending forth his animal companion in hopes of saving his tribe. Most Anglo-Saxonists view Bjarki as the direct analogue of Beowulf; and there may well be a generic relationship between these two heroes whose names both mean *bear*.(4)

A familiar scene from another Torslunda die also suggests that the bear was seen as an animal companion of the warrior

(4) The preceding paragraphs avoid pursuing tangential arguments surrounding the disputed etymology of *Beowulf* and *berserkr*, both of which, I believe, refer to the bear (resp. "Wolf of the Bees," "Bear-coat"). Summarizing pertinent scholarship, Chambers cogently argues that Beowulf, the Old English Bear's Son, has a name denoting "bear" (365ff.); Pettitt and Arent pursue the same argument, and also indirectly support the *OED*'s etymologizing of *berserkr* as "bear-coat." Perhaps the strongest evidence in support of the *Bee-wolf* "bear" etymology is the widely accepted association of the epic with the Bear's Son Tale, coupled with the likelihood that the stories of Beowulf and Bjarki (overtly a bear's son) stem from a common source (Gordon 26).

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(Bruce-Mitford, *Aspects* pl. 58b). This die depicts a hero fighting against two symmetrically opposed bears; the struggle could be interpreted as a shamanic initiation (cf. Arent 136), during which the animal companions frequently attack and dismember the initiate, only to reassemble him as a man reborn with the gift of shamanic power. Generally, the bear imagery scattered throughout early Germanic art is strong circumstantial evidence of an underlying shamanic mythos. The bear who hides behind Beowulf and Bjarki probably entered the literature as a reflex of a primeval bear cult; my study of shamanic tribes in the northern hemisphere has yet to reveal a people who possess the bear cult but lack shamanism (esp. see Hallowell). Therefore, to say that Germanic bear imagery reflects a preliterary bear cult is to say that this same imagery reflects prehistoric shamanic practice.

The evidence is fragmented and widely dispersed, but veneration of the bear is implied in archaeological remains as well as in the literature. In the summer of 1984, archaeologists working on Sanday in the Orkneys unearthed a bear's canine tooth, dated to the eighth century, probably imported from Norway, since no bears ranged on those islands then. The owner of the tooth had made the special effort to bring it to Orkney; he had also attempted, unsuccessfully, to pierce the root of the tooth so it could be suspended as a talisman. A small jet carving from Norway, depicting two bears gripping one another in a circular arrangement, also seems talismanic (Graham-Campbell pl. 488). A wealthy man in fifth-century Jutland was buried on a bearskin with the claws left on; Klavs Randsborg and Hayo Vierck tell me that Migration-period Norse graves sometimes have bear claws – or clay effigies of bear claws – placed in the mound with the dead (cf. Graham-Campbell pl. 510). Perhaps the single most significant shred of evidence – and the most relevant in the present context – is the name of the site on Oland where the Torslunda dies were found. *Björnhövda* is the name of a crossroads, a mill, and a modern village adjacent to the site. Bruce-Mitford, who tacitly assumes the antiquity of the name "Bear's head," writes that it is "significant-sounding," but does not pursue the significance (*Aspects* 219). Since the head of the freshly slain bear is a focal point in shamanic ceremonies of possibly Paleolithic antiquity in Northern Eurasia and in North America, it seems very probable that the name com-

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memorates a site associated with a prehistoric Germanic bear cult.

The obvious implication is that the memory of bear cults was a part of the early Germanic warrior's world; the reasons underlying the bear's recurrent association with shamanism are too expansive to cover here (see Hallowell). It may suffice to say that the creature tops off the power range among northern land animals, that he rather resembles man, and that his uncanny habit of hibernating is quite logically associated with death and rebirth (cf. Shippey 11; Carpenter 112-135). Like the shaman, the bear has irresistible strength; also like the shaman, he has the power to die and come to life again. And sometimes the two exchange shapes, quite matter-of-factly, to the tribal mind.

The man-between-bears motif on the Torslunda die is echoed by the man-between-wolves plaques on the Sutton Hoo purse-top. Here the motif and the underlying motive are the same; the only significant shift in basic design is from the bear to the wolf, from one predator to another. Like the boar on Beowulf's helmet, these strong beasts have obvious symbolic links with prowess in battle. Significantly, bears and wolves again parallel *berserkir* and *úlfheðnar*.

It is also significant that the bear and wolf both have a wide distribution as animal companions in the shamanic culture complex. An intriguing Amerindian parallel can be seen in the Haida amulet known as a "soul-catcher"; this carved bone talisman used by the shaman sandwiches a human head between two wolf heads (Woodcock 75; Lommel pl. 39). The shamanic application of such imagery leads me to view the Sutton Hoo wolves as images of animal companions, which might be compared in passing with Odin's ravens, Hugin "Thought" and Munin "Memory," whom Snorri places on either shoulder of the shaman-god, whispering secret knowledge in either ear. Odin's symmetrically placed ravens echo the arrangement of the whispering beasts on the purse-top and on the Torslunda die. In all three instances, the animal companions are best understood in the context of shamanism. Like the horned wolf dancers, and like the aurochs horns which are not at all out of place in the Upplandish-style ship burial at Sutton Hoo, the whispering wolves on the purse-top show that Rædwald's court, despite the conversion to Christianity, was still very

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much in touch with the ancient heritage of the Germanic homeland on the western shores of the Baltic Sea.

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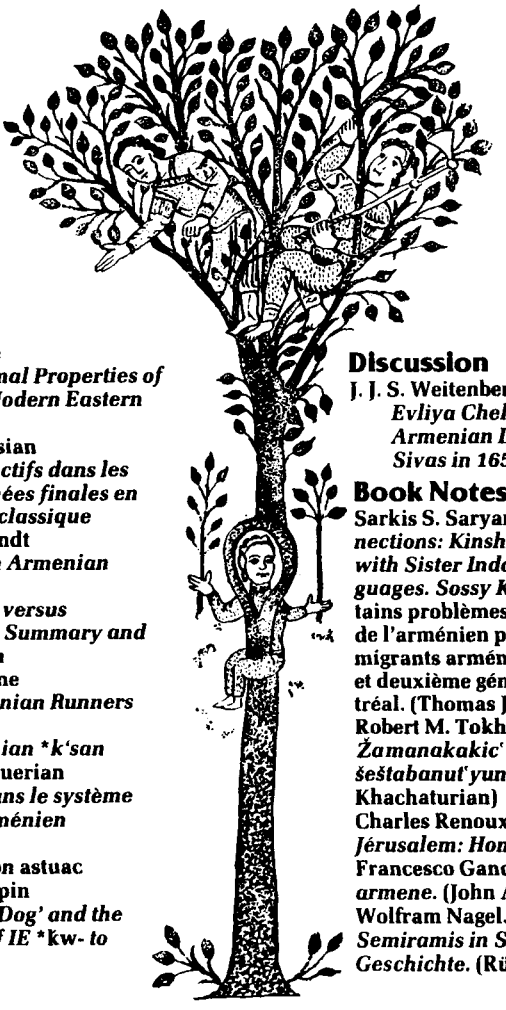

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THE SLAVIC *ZADRUGA* AND OTHER ARCHAIC INDO-EUROPEAN ELEMENTS IN TRADITIONAL SLAVIC SOCIETY

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The author discusses Sir Henry Maine's view that the South Slavic *zadruga* reflects the prototype of the earliest Indo-European communities in light of more recent research on the history of the Slavs and the character and location of proto-Indo-European society.

For Sir Henry Maine, the Southern Slavic *zadruga* was a survival of the prototype community from which he believed Indo-European society had developed. Patriarchal, patrilocal and patrilineal, and representing a virtually autonomous and almost pre-tribal level of social organization, the *zadruga* comprised a single extended family in which each nuclear family usually occupied its own quarters, each in a separate house grouped in a horseshoe formation around the home of the patriarch. Each *zadruga* represented a separate lineage or even a small clan, in itself, maintaining marital rather than political relations with neighboring hamlets – relations between communities being governed by the ties of marriage and kinship, and disputes being subject to the principles of the blood feud. Each *zadruga* owned the means of production communally, these being the property of the lineage as a family.

Recognizing that Indo-European societies at a more advanced level of social evolution customarily recognized a royal family, a warrior aristocracy and a body of freemen or commoners, and that their system of government traditionally rested upon some kind of 'parliament', comprising a king, a council of nobles, and a periodical assembly of the freemen (or the 'army', since all freemen were required to bear arms in defense of their people in times of unrest), Sir Henry sought the roots of these institutions in the *zadruga*, and believed that he could identify these .

"The community is at the first sight rather democratically than despotically governed," writes Sir Henry Maine, ... "every member of the body has an absolute right to be maintained, housed, and clothed from the common fund; every daughter of the associated families has a right to a marriage portion if she marries; every son has a right to a provision for

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his wife when he introduces her to the community. Every male in the community has a voice in its government. The assembly of kinsmen meets every day as a rule, generally in the evening after work is done, under a tree in the neighbourhood of the common dwelling . . . nevertheless as a rule it is the old men who debate; the authority, which, as I have said before, the South Slavonians assign to old age, makes the opinion of the old far more weighty than their individual voice; and in the very large communities it is generally only the more mature heads of families who attend the assembly. All this is exactly in harmony with what we know of the beginnings of aristocracy."

"Another aspect, however, of the government of the community is monarchical, and at all times the most important member is the House-Chief, the *Domatchin*. He alone represents the association in its dealings with other persons and members. The administration of all its affairs is in his hands; he allots the daily tasks; he presides at the common meals and distributes the food; he reprimands for defaults and delinquencies". (1)

Thus, the *Domatchin* or head of the *zadruga* household was generally an elected official, chosen from amongst the patriarchs of the constituent nuclear families, usually from that family most closely linked to the common ancestor by the rule of primogeniture. The *Domatchin* alone represented the *zadruga* in all negotiations with other households, and his word alone was accepted by outsiders. Within the *zadruga*, he was solely responsible for all minor decisions, where these were simply a matter of applying established customs to the daily problems, but should a problem requiring a policy decision arise, which could not be solved by the application of known custom, then he was expected to refer this to the "assembly." No discussion or gathering was "legal" however, unless the assembly met in his presence, or at least with his approval.

The obvious social security conferred by membership of a *zadruga* had led many others, besides Maine, to praise it. Le Play, for one, was attracted by the *zadruga*, believing that the prosperity which its members reflected resulted from their belief in the natural basis of moral law, the strength of the patriarchal family, and the abundance of fertile soil, which eliminated any danger of over-population, for when the *zadruga*

(1) Sir Henry Sumner, *Early Law and Custom*, Holt & Co., New York, 1886, p. 244f.

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became too large to live off the land situated within convenient reach, steps would be taken to establish a daughter village, peopled by the surplus members, with the full initial support of the full population of the parent *zadruga*.

A visitor to Russia during the last century, reported that with adequate land still available for expansion, new villages were still being established in this manner. Such daughter villages would retain their links with the parent village over a number of generations, even though under more modern conditions it was sometimes necessary for such migrants to travel considerable distances to find virgin land not already taken up by previous divisions of this kind. This commentator observed that when one such village was totally destroyed by fire, the inhabitants returned en masse for succour to the mother village, even though this was situated no less than 250 miles away, and the connection was already two generations distant!

The picture which Sir Henry Maine gives us would appear to be corroborated by other sources than those which he quotes. Very enticingly the *zadruga* offers itself as a convenient prototype for our as yet hypothetical Indo-European society, comprising an elected headman, chosen invariably from an ancient and respected family lineally descended from the eponymous founder, who could be the early prototype from which kingship later derived; a council of elders, who were to evolve into nobles; and the basis, too, for a consultative assembly of freemen. Within the *zadruga*, also, we know that there were formerly slaves — usually of alien origin — and it needs only a class of freed slaves to give us the Indo-European concept of "freedman," equivalent to the Germanic 'laet' and the Roman 'libertinus.'

The Archaic Character of the Slavic Language and Culture

Let us therefore take a brief look at the prehistory of the Slavic people, who are customarily divided on a linguistic basis into the Eastern, Western and Southern Slavs. The former of these categories comprises the Great, White and Little Russians, the second represents the Poles, Czechs, Moravians and the old Wends, and the latter primarily the Serbs, Croats and Slovenes.

Herodotus mentions the allegedly Slavic *Budini* and *Neuri*, and states that they lived between the Dniester and the Dnieper, being at that time adjacent to and subordinate to the Scyths,

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but Menges(2) shows that these classical reports cannot be accepted as precise.

M. Gimbutas traces the Slavs ultimately from the Kurgan pastoral culture of the Asian steppes(3) but places the "proto-Slavs" – immediately prior to their dispersion – in southern Poland and northwestern Ukraine, in the area occupied by the Globular Amphora culture, and gives them a crop-raising and stock-rearing, agricultural economy. Some Polish and Czech writers on the other hand, believe that the Slavs were connected with the Lausitz urnfields, a more martial culture.

Sir Henry Maine's view that the Slavic *zadruga* represents a virtually undifferentiated form of a supposed pre-proto-Indo-European community has received indirect support from the recent work of the eminent Russian scholar O.N. Trubacev, who has expressed the view that the Slavic language "evolved uninterruptedly from its Indo-European source. The latter opinion agrees with a statement by Meillet on Slavic as an Indo-European language of archaic type whose vocabulary and grammar did not experience any staggering changes like Greek did (in its vocabulary)."(4) Trubacev holds the opinion that the Danube Valley was the 'original' home of the proto-Indo-Europeans, not the west Eurasian steppes as Marija Gimbutas maintains, and that the Slavs and the Balts and other peoples who remained near to this original homeland retained the archaic or traditional language forms more closely than did the Indo-Europeans who migrated further afield into areas where their speech would have been affected by the influence of diverse peoples and cultures.

An identical argument can also be developed to support Sir Henry Maine's views concerning the archaic nature of the I-E *zadruga*. If the Celts did remain close, as Trubacev suggests, to the ancient PIE homelands, and if they retained a degree of archaism in their language, then why not also in their social structure? Since what we know of the ancient Baltic social system would parallel that of the Slavs fairly closely, the argument gains strength. Birnbaum's critique of Trubacev's

(2) Karl H. Menges, *An Outline of the Early History and Migration of the Slavs,* Columbia University Press, p. 9.

(3) Marija Gimbutas, "The Indo-Europeans: Some Archaeological Problems, *American Anthropologist*, 65, p. 825.

(4) O.N. Trubacev, "Linguistics and the Ethnogenesis of the Slavs" *Journal of Indo-European Studies*, Vol. 13 pp. 203-256.

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theory (5), incorporating the views of W.P. Schmid and J. Udolph, who place the homeland of the proto-Slavs in the northern Carpathians, would in no way affect this conclusion.

Graham Clark and Stuart Piggot imply that the Slavs were connected at one time with the Pit Grave culture of the eastern Ukraine, where "from the middle of the third millennium B.C. we find a group of interrelated cultures known mainly from tombs under tumuli but also from settlements such as that of Mikhailovka near Kherson, with rectangular timber built houses up to 55 by 15 feet overall, and in some instances subdivided into two or three rooms and possibly accommodating small extended families."(6)

The proto-Slavs must also have occupied part of the area formerly settled by Tripolye people, regarding whom V. Gordon Childe states: "Tripolye farmers lived in substantial houses with floors and walls of split timbers, heavily plastered with clay. They comprised two to five rooms and were furnished with large ovens and also cuneiform pediments or altars. Russian prehistorians regard the larger houses as enlargements of a two-roomed unit to accommodate married children. Each would then represent a joint household or great family of a type that survived among the southern Slavs into this century." (7)

Altogether, then, it would seem that the late prehistoric Slavs were not pastoralists, and that from analogy with other cultures practising an agricultural way of life in the same area, their pattern of social organization may well have been that of communal agricultural settlements, and Friedrich (8) suggests that: "the section of the patrilineal Indo-Europeans who remained in and around the Tripolye area of the Ukraine and Roumania presumably intermarried with the local populations. The interpretation of East Slavic origins is fraught with difficulties."

Despite the necessarily controversial nature of any speculation concerning the social organization of the proto-Slavs, we may reasonably suppose that from prehistoric times they were heirs to a predominantly agricultural way of life, incorporating the

(5) Henrik Birnbaum, 'Indo-Europeans between the Baltic and the Black Sea", *Journal of Indo-European Studies,* Vol. 12, pp 235-260.

(6) Grahame Clark and Stuart Piggott, *Prehistoric Societies,* A.A. Knopf, New York, p. 287.

(7) Gordon V. Childe, *The Prehistory of European Society*, Penguin, Harmondsworth, 1958, p. 62.

(8) P. Friedrich, "An Evolutionary Sketch of Russian Kinship", *American Ethnological Society Proceedings*, 1962, p. 9.

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breeding but not nomadic herding of domesticated animals. If Gimbutas is correct in tracing their origin from the pastoralist of the steppes, then they had converted their economy to woodland, agricultural conditions, and Cross (9) states that the common Slavic vocabulary shows the proto-Slavs to have been settled agriculturalists well before their diffusion. Similarly the first positive identification reveals a communal village existence, with each village representing a single enlarged household. To the extent that there had formerly been pastoral connections, some early societies which may have been Slavic also reveal chieftains' burials and a village "nobility," but these either did not survive subordination to Gothic, Hunnish Byzantine and Varangian overlords, or else disappeared as a result of adaptation to a more agricultural bias. While we cannot accept Maine's view that the Slavic village was a faithful example of archaic Indo-European folk society, the Balkan *zadruga* may well represent an adaptation to local neolithic social patterns if it is not actually a generic survival of such a system.

The Indo-Aryan Joint Family

S. H. Cross believes that "like the Indian 'joint family', the *zadruga* is a survival, not merely of Slavic, but also of common Indo-European antiquity."(10) While it is easy to see the *zadruga* in an agricultural setting, one could hardly expect the *zadruga* to have been carried intact to India by a predominantly pastoral, cattle-herding, socially stratified people, as the Indo-Aryans have been portrayed. However, basic social ideas can often persist despite ecologically and technologically inspired modifications, and it is not impossible that the horse-riding warrior class was accompanied by a class of farmer cultivators amongst whom ancient *zadruga* type joint family institutions may have survived.

There is therefore nothing in the archaeological data to prevent us from seeing Southern Slavic *zadruga* as a lineal survival of the primordial Indo-European family community, which had not yet acquired either an upper class of nobles or even a recognizable rank system. Traditional Slavic society provides us with examples of European agricultural communities of both

(9) S.H. Cross, *Slavic Civilisation through the Ages*, Russell & Russell, New York, 1963, p. 20.

(10) S.H. Cross, "Primitive Civilisation and the Eastern Slavs", *Slavic Review*, (5), 1945, p. 55.

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unilineal and multi-lineal character, even if these cannot be shown to be primordial. As a hypothetical reconstruction of the PIE social system, as it manifested itself in a settled agricultural environment, the Balkan *zadruga* serves our purpose well.

Other Aspects of Traditional Slavic Culture

Bearing in mind these diverse considerations, let us glance at the early social systems of the three Slavic-speaking groups, which are unfortunately far from adequately documented. The picture which we obtain, is that of an essentially agricultural people, whose speech and whose pre-Christian religion is undoubtedly Indo-European in character, and whose pattern of family organization corresponds closely to that of the hypothetical proto-Indo-European culture of the philologists, but who reveal only poorly developed political organization beyond the level of the family. Among the early Slavs the trustee family is the dominant allowing for the truncating effect of alien domination, there is only slight evidence of a 'rank' society and none at all of the bilateral kindred associated with rank-conscious outlooks.

In the centuries preceding their movement into the Balkans, from the Danube, Ukraine and the northern Carpathians, the Slavs of these areas were presumably dominated first by the Goths and then by the Huns, and while it is possible that this might have resulted in the elimination of an earlier incipient aristocracy which they may have possessed – an aristocracy which was again to be prevented from emerging by later foreign domination – it would not necessarily have introduced any widespread innovations in their social system, as it was the custom for both Goths and Huns to levy taxes or food rents rather than to enslave the mass of the people they subjugated.

This situation scarcely affected those who had migrated northwest into Poland, northeast into Russia and southwards into the Balkans, creating the three main language groups already referred to. In all cases the migrants must have modified their economy and pattern of life to accept the changed topographical conditions, probably adopting local agricultural traits to some extent. Where such techniques may have been particularly well adapted to local conditions, this process of acculturation would have been even more pronounced. In later periods,

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the Western Slavs were also to come into frequent contact and conflict with the Germans (memories of the Teutonic knights!) and adopted Catholic Christianity; the eastern Slavs acquired as overlords a class of Scandinavian Varangians, progenitors of the unpopular boyars, and accepted Eastern Orthodox Christianity; while the Southern Slavs were governed by both the Byzantine Christians and Turkic Moslems. We have to be careful therefore, to allow for influences from these and other later contacts if we attempt to draw parallels between historic Slavic institutions and earlier forms.

The Southern Slavs, who moved into the Balkans, after the westwards departure of the Goths, and established an uneasy frontier with the Albanians, would have inherited a pattern of subsistence some six thousand years old, if we may hypothecate a continuity in the economy of this area from the Starcevo culture, through Vinca adaptations, to the Slavonic. All the evidence from Starcevo "tell" settlements onwards indicates a continuing social system of *zadruga*-type villages from the early neolithic down to recent times.

By contrast, those Slavs who spread northeast, the ancestors of the Russians, found themselves in the realm of the possibly related Fatjanova culture, part of the "battle-axe" complex, where chieftains' burials are recorded, and where even small children were sometimes buried with small, clay battle axes in their graves. Some archaeologists have surmised that this woodland, agricultural and grazing culture was directly ancestral to the Slavic culture of northern Russia, but the fact of at least some degree of migration from the south is satisfactorily established even though no demonstrable variation in skeletal material is to be found.

The *zadruga* is undoubtedly close in concept to the hypothetical early Indo-European family, for whom 'law' was simply 'custom'. Custom would have been administered by the 'housefather' or patriarch, and when new situations arose which could not be adequately solved by the application of existing custom, fresh precedents would be added by decisions of the 'housefather' in consultation with a council closely similar to that of the *zadruga*, comprising the heads of nuclear families. Philology gives us no reason to doubt the communal ownership of property, or that as in the *zadruga* the requirements of each family were met out of the household income as a whole. From histo-

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rical evidence we may assume a very limited recognition of private property relating only to personal articles, while all members of the extended family fall under the 'patria potestas' of the 'housefather'.

As we would expect from the philologists' reconstruction of the proto-Indo-European family, the position of women in the Balkan *zadruga* was not lowly, and women have on occasion been known to attain considerable influence in the community. A respected widow might even accede to the headship, as M.E. Durham tells us: "The most important object of marriage is to obtain sons. A sonless man had no one to avenge him, and his soul would never rest. Therefore in the old days, when a girl was handed over, it was usual that the couple should cohabit, but no marriage ceremony should take place till a son was born. The (Christian) church fought this custom and almost abolished it. But some cases still occur." (11)

Marriage was by payment of bride price, although in recent times the dowry system was adopted in certain areas, and a woman might be divorced for failure to produce sons, in which case she could be sold again by her relatives, but more cheaply than before.

Beyond the *zadruga* a shadowy tribe emerged, within which all marriages took place. No property might be disposed of outside the tribe by any individual clan or *zadruga*, and in time of war, every adult male tribesman was required to bear arms. If any man should evade this responsibility, he would be disarmed and dishonored even in recent times, and in earlier times would have been outlawed and denied all kinship rights.

The existence of tribal organizations in the Balkans is attested as early as the ninth century, by Constantine Porphyrogenitus, who mentions that a tribal chieftain was known as a *zhupan*, and the fact this term was also used by Western Slavs of Bohemia, substantiates the existence of a tribal administrative structure, weak though it may have been, prior to alien domination.

The Albanians, though not Slavs, were also Indo-European speakers and shared a closely similar *zadruga* type organization with the Southern Slavs as well as an identical material culture. They were, however, perhaps more strongly organized into

(11) Edith M. Durham, *Some Tribal Origins, Laws and Customs of the Balkans*, George Allen and Unwin, London, 1928, p. 193.

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tribes than their Slavic neighbours. The Albanian clan was clearly recognized, being known as a *fis*, and each tribe was made up of several intermarrying *fis*. The laws of exogamy between *fis* were strictly observed, and heads of *fis* were expected to remember extremely long pedigrees in their ignorance of the art of writing.

The closest equivalent of the South Slavic clan-community among the Eastern Slavs, or Russians, was the *rod*. Early chroniclers of Russian Slavic life use the term *rod* in such a general way, that it is difficult today to discern whether they meant "family," "kindred," "clan," "tribe" or even "nation." S. H. Cross takes the view that the *rod* may be seen as the primitive eastern Slavic equivalent of the southern *zadruga* and Hrushevski defines it as "a family and economic union of a group of people usually connected by blood relationship on the father's side (more rarely, with an admixture of strangers), conducting their economy in common under the rule of a chief, or "elder," "ruling over" this *rod*. (12)

However, a more common East Slavic institution was the *dvorisca*, a group of 20 to 30 households often using the clan patronymic ending with the suffix *-ichi*, or *ovichi*. The communal *dvorisca* was a township, even though the bond of blood relationship remained strong, and often contained two or more patri-lineages of separate descent, thus sometimes making marriage within the *dvorisca* possible, but still owning fields, woodlands and other means of production communally.

Subsequent Social Evolution

This larger grouping led Hobhouse (13) to comment that "the Russian *mir(dvorisca)* was a conscious effort to maintain partnership within the village by a periodical redistribution of the land rights." The *dvorsica* was something new. It represented a step towards the formation of what we may call the "family state." The concept of the trustee family was not abandoned, but was instead extended beyond the patrilineage to include affinal relatives. When the Scandinavians entered Russia in the ninth century, rowing their way along the rivers, they found the countryside so fully populated by stockaded *dvorisca* polis-type

(12) S.H. Cross, "Primitive Civilisation and the Eastern Slavs", *Slavic Review*, (5), 1945, p. 51.

(13) L.T. Hobhouse, *The Historical Evolution of Property*, Macmillan, London, 1922, p. 18.

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settlements that they named it Gardarika, "the land of stockaded towns."

It is not known exactly how this enlargement of the *zadruga* came about, but K.S. Aksakov has shown that the main drive towards multi-clan settlements took place among the eastern Slavs under the domination of the Varangian princes. (14) As the rural population increased, the large households comprising solely members of a single exogamous kindred tended to be replaced by multi-lineage villages, and separate families connected by affinal ties might cooperate in clearing virgin forest for the settlement of new villages. This would result in several unilineal *zadruga* type hamlets becoming linked in a single *dvorisca*, and at a later date further combinations of *dvorisca* might take place, producing a *vervi* of several towns and diverse lineages, still accepting collective responsibility for its members, and paying wergild for homicide committed on its land by members. It has also been suggested that apart from the fact of political domination by alien Varangian families, there may have been economic forces at work, the use of the heavy plough making larger communities possible than in the narrow valleys of the Balkans. (15)

The government of the larger *vervi* continued the pattern of the *zadruga* and *bratsvo*, comprising a council of elders known as *starosta* (from *staryi* – 'old'), in which the oldest members of the most respected families were represented. The council was known as a *vece*. (16) This term, *vece*, is derived from Old Slavic *visc*, which is cognate with Lithuanian 'wiesz' (community), Greek 'oikos', Keltic 'fich', Teutonic 'vic' ('wick') and Sanskrit 'vis' ('visah'; 'vaisya'), all relating to local settlements or communities. After the Varangian princes established themselves, the *starosta* were adopted as part of their entourage, and became known as *druzina* ('escorts'), in the quasi-feudal society which then prevailed.

Before the arrival of the Scandinavian nobility and the Kazar 'merchant aristocracy,' Russian society only revealed two of the usual three-tier class structure of Indo-European society. The

(14) S.H. Cross, *Slavic Civilisation through the Ages*, Russell & Russell, New York, 1963, p. 13.

(15) E. Cecil Curwen and G. H. Hatt, *Plough and Pasture — The Early History of Farming*, Henry Schuman, 1953, p. 14.

(16) S.H. Cross, "Primitive Civilisation and the Eastern Slavs", *Slavic Review*, (5), 1945, p. 57.

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upper class might be said to comprise the families from which the *starosty* or elders of the *vervi* were drawn. The second comprised the freemen farmers or *smerdi*, below whom were the slaves.

The division between these classes was nowhere near so sharp as among the Teutons, and the Slavs were also reported to treat their slaves liberally. No ethnic barriers existed between the Slavic classes (as divided the later Varangians from the peasants) and considerable social mobility can be traced. The 'Strategikon' of Pseudo-Mauricus of the sixth century comments that: "those in captivity among them they did not hold in servitude for an unlimited period like other nations, but set them a fixed term after which it was their choice whether they wished to return home after paying ransom or to remain among them as freemen and friends." This statement does not, unfortunately, make it clear whether the slaves were permitted any 'peculiam' of their own, or whether the ransom had to be paid by distant relatives. It is also not clear whether the ransom had to be paid only if they chose to return to their homes, or whether it had also to be paid before the slaves could remain with their captors, duly manumitted as freemen. In any case, after the arrival of the Varangian overlords, even the freemen tended to be reduced to the rank of serfs.

There is no measure of agreement as to whether the Eastern Slavs had actually developed a system of tribal organization similar to that of the Serbs, before the coming of the Varangians. Around that time, data indicating the existence of *plemena* or tribes is on record, but there are indications that some of these had evolved more or less fortuitously, representing "associational" groupings of clans rather than "classical segmentary" tribes. Among the Western Slavs, on the other hand, the development of political ties by virtue of kinship multiplication is clearly traceable. Here was a more settled existence, whereas the clan pattern of the Eastern Slavs was disrupted by "frontier" conditions. With the Western Slavs, the evidence of *-ichi* in tribal names indicates that the tribes arose out of an extension of the bonds which linked clans, and the loss of extended kinship ties amongst the Western Slavs was an event of relatively recent occurrence.

Among the early Slavs, marriage by purchase or payment of bride price seems to have been the rule, the dowry system

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which arose in certain areas being a later innovation. However, the Laurentian Chronicle tells us that the Drevlians kidnapped or captured their wives, and the eleventh century Chronicle of Nestor reports that the *Drevliane*, Radimichi *and the Viatichi* held "games on the outskirts of the villages; they met at these games for dancing and every kind of diabolic amusement (the writer was a monk) and there they captured their wives, each man the one he had covenanted with." Perhaps the most significant words here are "each man the one he had covenanted with" thus implying that even in this early account of "bride capture," the process of capture had been relegated to a ceremonial.

Once married, the chastity of the Russian woman gained her a reputation, and severe penalties, including public humiliation, were her fate at the hands of her husband if found guilty of adultery. Some observers state that divorce was readily permitted during pre-Christian times, although S. H. Cross reports that the sanctity of marriage was strictly preserved, and Slavic women had a high reputation for chastity, with early accounts of suttee-like suicide on the death of their husbands being recorded.(17)

Unlike most other Indo-European societies, polygamy seems to have been fairly common among the ordinary freemen of pre-Christian Slavic society, whereas concubinage was little known. Women stood on virtually equal status with the men, and the sternly patriarchal nature of subsequent Slavic societies was largely the product of Christianity. Professor Kovalevsky reports that endogamous customs not only survived into the nineteenth century, but were also looked upon with favor, and Elnett states that unions of brothers and sisters were common among the early Russians, when enmity and feuds might prevent the acquisition of wives. For colour, he quotes the Russian folk-ballad called Byliny: "When Ilya of Murom asks Nightingale the Robber how it is that all his children seem to have "one face," the Nightingale replies: "When my son grows up, I marry him to my daughter, when my daughter is old enough, I give her my son for a husband, and I do this in order that my race may not die out." (18)

(17) S.H. Cross, *Slavic Civilisation through the Ages,* Russell & Russell, New York, 1963, p. 18.

(18) E. Elnett, *Historic Origin and Social Development of Family Life in Russia,* Columbia University Press, 1926, p. 17.

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The Persistence of IE Ancestor Worship

The Slavic religion, as we might expect of a primarily agricultural people who had not developed either a strong state concept or an indigenous system of royal kings, was essentially rooted in nature worship, and many of the pantheon of sky gods and of the various boga (cognate with Sanskrit, 'bhaga', Teutonic, 'bogy') were recognizable as natural phenomena. As among the Teutons, there were sacred trees and groves, but the evidence of ancestor worship, emphasized by Schrader, (19) is not strong. This could perhaps be partly ascribed to the shortage of data relating to the pre-Christian period. However, the White Russians firmly believed that the souls of their fathers watched over their children and grandchildren (whom they would have known in life) and the souls of the departed were remembered at calendrical feasts, so that ancestor worship even if largely eliminated by Christianity had already advanced beyond the 'generalized' level before conversion.

In addition, therefore, to general feasts for all dead forebears, there were special feasts for those who had died recently, and even during Christian times the head of the household (acting as family priest) invoked the "sacred ancestors, we implore you, come fly to us." Small particles of food might be thrown under the table to nourish the departed, and at the conclusion of the meal, the living made sure that all the dead had left the house, actually terminating their closing invocation with shooing sounds similar to those used to domestic fowl. It would seem, therefore, that the Slavs were somewhat apprehensive of the departed spirits, and if so they stood in this way in contrast to the Greeks, Romans and Indo-Iranians, who had no fear of the departed members of their own family.

These departed souls were known collectively as *dzjady*, or 'grandfathers', and were associated with the *damovoy* or house spirit. The *damovoy* of the house had only benign intentions towards the living members of the family, but the *damovoy* of another household might be malevolent, stealing one's possessions or driving away one's poultry. Both *dzjady* and *damovoy* were connected with the ancestral hearth – and with the cabin stove, after open hearths gave way to stoves. Herbert Spencer tells us that when the Russian peasant moved house, he was

(19) O. Schrader, *Prehistoric Antiquities of the Aryan Peoples,* translation by Jevons, London, 1890, p. 26.

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careful to rake the embers from the old stove into a jar, and light the stove in his new house with the old embers, greeting the first flames with the words; "Welcome, grandfather."

This association of the hearth with the family and with the ancestral spirits, common to Indo-European peoples almost everywhere, survives even in the association of fire with the ancestral sacrifices among those who have migrated to climates in which a year-round hearth fire would be intolerable. To a trustee family household, the fire on the hearth is the common meeting ground, not only of those living and present, but also of those who have gone before, and even in recent times it remained the greatest insult to an Irish family to stamp on the embers of the family hearth.

For the same reason, the house is a place of family refuge, the one part of the world which is entirely the private property and soul of the family, the land outside being the communal property of the wider kindred, or clan or tribe.

Both the house and the surrounding yard (the Russian *isba*) were protected by the "sacra" of the hearth ritual. Just as the Lombard laws of Rothair did not permit an intrusion into the house of a murderer – all that could be done was to burn his house over his head and seize him as he ran out – so the somewhat feeble legend that an Englishman's home is his castle was matched (equally feebly) in the Russian peasant's attitude to his log cabin – survivals both of a pagan philosophy that saw the family as the essential basis of all social relations. If the sacredness of the home was subsequently more honoured in the breach than the observance, the existence of the idea bears testimony to its once having been a powerful 'mos' in Indo-European society.

Even into the last century, the community of property within the Slavic village remained strong in many areas, and we hear of younger members of the family who migrated to a distant city, still being held responsible to the home community for their wages, on the grounds that the village had educated them to their craft, and that they were merely "trustees"of the community skills. A parallel concept was reflected in India in the High Court decision in Madras, towards the turn of the last century, when the family of a prostitute claimed a share in her relatively high earnings, but lost the case when it was decided that she had acquired the skills of her trade without their assis-

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tance, and that she might therefore retain all earnings from this trade for herself!

Perhaps the prime reason why the Slavs would not have developed an aristocracy or a stratified society at the local level was their repeated subordination to neighboring peoples, but apart from this obvious circumstance, we must also record economic factors. In eastern Europe, unlike Germany there was a superabundance of land. All that was needed was to cut down a few more trees, make a fresh clearing, and establish a new settlement, without having to displace any earlier settlers. There was therefore little inter-community conflict, little incentive for strife among the Slavic peoples themselves, and in a horticultural setting there would be no indigenous nobility of cattle barons around whom an heroic society might form. To some extent the alien Scandinavian adventurers – who were precisely the plunder-and-conquest motivated heroes leading bands of free adventurers – supplied this deficiency and the rule of the boyars was introduced over large areas of the Slavic territory. But a growth in population seldom presented any land problems to the Eastern Slavs, and as the Roman empire was staggering towards its final collapse, movements of Teutonic peoples to the west of the Slavs on more than one occasion left rich lands virtually empty as the former occupants loaded families and possessions onto ox-wagons and made off in the general direction of civilization, fame and fortune.

Only the history of the Southern Slavs is somewhat different, because the continued threat from the Turks meant that there was no further room for expansion. It is therefore among the Southern Slavs that we find the elements of an heroic age, although the ethics and ideologies of Marco and his contemporaries cannot be truly compared with those of more classical heroic societies.

The survival of the *mir* down to the present century made the introduction of agricultural collectives in Russia a relatively easy matter. The trustee family as a genealogical concept was dead, but the idea of a continuing village community owning the means of production survived, and the modern Russian collective farm arose not as Marx and Engels would have expected, on the ashes of individualism and private property, but on a foundation of age-old village communalism, which inhibited the growth of capitalist concepts, and was the general pattern of Europe, in all probability, until the evolution of

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proto-Feudal conditions, when the warrior class superimposed themselves upon the less mobile agriculturalists and subordinated them to an increasingly stratified and rank-conscious social system.

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HAS THE TEXTBOOK EXPLANATION OF THE ORIGINS OF YIDDISH AND OF ASHKENAZIC JEWRY BEEN CHALLENGED SUCCESSFULLY?

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The author reviews an article by Alice Faber and Robert D. King, which was published in Volume 24 Number 4 (Summer 1984) of *The Mankind Quarterly* entitled "Yiddish and the Settlement History of Ashkanazic Jews", which sought a Bavarian origin for proto-Yiddish. He questions this viewpoint, and defends the 'Textbook' explanation.

1. What the Explanation Is

Alice Faber and Robert D. King's article (1984), while it raises many interesting questions, has not, in my opinion, successfully challenged the generally accepted explanation ("the textbook explanation") of the origins of Yiddish or of Ashkenazic Jewry. According to this explanation, if we could trace the genealogy of all native Yiddish-speakers to just before the time the language existed, we would find Jews whose native language was Zarphatic or Italkian (these are, respectively, the Jewish correlates of Medieval French and Italian). Since not all biological ancestors of latter-day native Yiddish-speakers began using it when it first arose, we would also find, at later times, native speakers of Knaanic (the Jewish correlate of one or more Slavic languages), a much smaller number of Sefardic Jews, a likewise much smaller number of non-Jews, and probably, a not insignificant number of other Jews whose native languages we cannot identify today. Ashkenazic Jewry thus has several roots, as does the Yiddish language.

The question is where and when to situate each of these roots. The generally accepted explanation (hereinafter *GAE*) has it that about a thousand years ago Jews from what is now France and Italy (speaking Zarphatic and Italkian, respectively) settled in the Rhine Valley between Cologne and Speyer and the adjacent part of the Moselle Valley. These Jews, the first Ashkenazim according to the GAE, were under the influence of four languages: their native Zarphatic or Italkian (see Gold 1984a: 77 for possible evidence that Zarphatic-speakers were in the majority), their archistratal language (Hebrew-Aramic, which from their viewpoint, was not two separate languages

* This article has been condensed by the publisher from a much longer, footnoted, paper which it is anticipated will appear in a future issue of *The Jewish Language Review*. Unfortunately the author was unable to proof this version, and any editorial or typographical errors are therefore the fault of the publishers, rather

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but one language ranging over a continuum with pure Hebrew at one end and pure Aramic at the other), and the local German which they heard from non-Jews with whom they came into contact. Elements from these four languages went into what the GAE calls *Earliest Yiddish*.

Whether because of expulsions, other kinds of persecutions, or voluntary migrations (or a combination of factors), an undetermined number of people belonging to these communities moved (at more than one time) to other parts of German-speaking territory. Jews may already have been living in the latter areas, but we do not know. In any case, the speech of the Jews coming from the Rhine or Moselle Valleys was influenced by the local German of the areas to which they had now moved. The migration away from the Rhine and Moselle Valleys (not necessarily continuous, but taking place over hundreds of years, and not necessarily consisting of the movement of entire communities) eventually reached Slavic-speaking territory, where these migrating Jews came upon already established Jewish communities, whose origin(s) is/are unknown to us. The latter communities were speaking Knaanic and they too had Hebrew-Aramic as their archistratal language.

These Knaanic-speakers were all eventually Ashkenazified to such an extent that they disappeared as a separate group, the only vestiges of Knaanic Jewry today being a few Knaanic-origin vocabulary items in Yiddish (see, for example, Gold 1983a on *treybern* 'to porge'), including some Yiddish given names and some Ashkenazic family names (see, for example, *Shkolnik* in Gold 1985b: 371-372, with reference to more extensive treatment elsewhere).

Zarphatic and Italkian, then, were the earliest substratal languages of Yiddish and Knaanic was a later one. Vestiges of these three languages in today's Yiddish are numerically small (though often semantically important). On the other hand, the influence of Medieval German, archistratal Hebrew-Aramic, and non-Jewish Slavic languages (mainly Polish, Ukrainian, and Belorussian) has been significant, as can be seen from the etymological composition of Modern Yiddish. With respect to the Jews speaking other languages who became Yiddish-speakers (for example, Sefardic Jews), their numbers were probably small enough to dispense us from having to try to determine their exact origins in order to explain adequately the genesis or later development of Yiddish or of Ashkenazic Jewry.

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The foregoing explanation leaves two questions unanswered: were there any Jewish communities already established on German-speaking territory as Rhine or Moselle Jews moved onto this territory and what was (were the origins(s) of Knaanic Jewry? An answer to the first question may or may not be relevant to the authors' challenge of the GAE (they presumably feel it is). An answer to the second question is, in my opinion, not relevant (again, they presumably feel it is) because, as in linguistics, once we establish the immediate source of an item, non-immediate sources, however interesting in themselves, are not relevant.

2. Statistics

The authors base a large part of their challenge on numbers: the Rhineland Jews (and those in the neighboring Moselle Valley I presume they would be willing to add) were too few in their opinion to be the ancestors of all Ashkenazic Jews (= Yiddish-speakers and their descendants). However, as noted above, the GAE does not claim that every Yiddish-speaker descends solely from Rhineland and Moselle Jews of the turn of the millennium or thereabouts. All it says is that at least one strand of Ashkenazic Jewry goes back to this place and time (a hypothesis which the authors accept; cf. the quotations below).

The authors sometimes refuse to cite statistics or attach much credence to the statistics of others (e.g., pp. 395-396, ft. 3) and rightly so: they are only rough estimates and we have no way of verifying them (a good rule of thumb is to be skeptical about all figures not based on modern censuses and even the latter are subject to caution). However, on pp. 396, 409, and 415 the authors do not hestitate to accept estimates which are just as much guesses as those which they reject; they do so, it seems, because these figures support their argument. To be fair, however, let us disregard all figures, but let us grant, to give the authors the benefit of the doubt, that the number of Ashkenazim has been too large to ascribe all of them a Rhineland-Moselle origin (is this not the crux of their argument?).

As noted above, the GAE posits several roots, hence the authors seem to be challenging an explanation which no one has ever suggested, namely that the bulk of Ashkenazic Jewry goes back to the Rhine and Moselle Valleys of a thousand years ago or thereabouts. All it really says is that one strand goes back to this time and place. Is there even a statistical problem

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here? Firstly, despite pogroms, infant mortality, apostasy and any other factors which could limit the numerical growth of a community, a number of factors encourage growth (those which Weinryb suggested for Polish Jewry [p. 410] apply here too). Secondly, we must consider *pedigree collapse*, that is, the marriage of cousins, which explains why our ancestors do not increase by geometric progression as we go back in time. Robert C. Gunderson (the coiner of this term) has written that if we keep on multiplying our progenitors by two every generation (thus, eight greatgrandparents, etc.), by about 800 C.E. each of us would have between four and seventeen billion ancestors (according to his earlier estimate) or, if we double our progenitors every twenty-five years, about 263 billion of them; see the discussion in Shoumatoff 1985: 230-231. Whatever the correct figures, even if we reduce them drastically (to "only" several million) to give the authors the benefit of the statistical doubt, we see that a geometrical progression is patently impossible, hence we must posit the frequent marriage of cousins, hence from a relatively small number of early Ashkenazic Jews (in the Rhine and Moselle Valleys), with later increments (of various sizes) from Knaanic Jews and possibly others, one can easily arrive at latter-day Ashkenazic Jewry without running into serious statistical problems, if any at all. Again, this does not mean that every latter-day Ashkenazi descends solely from Rhineland and Moselle Jews.

The authors write that "Jewish settlement in Europe is generally assumed to have begun during the Roman Empire. However, there is little documentary evidence supporting this assumption, and much of what we know is purely accidental" (p. 395). The authors may have so written in order to set the stage for their later emphasis on the supposedly small size of Jewish communities in the Rhine and Moselle Valleys. Even if this were not their intention, the introductory remark about Jews in the European portions of the Roman Empire may be misleading. There may be few documents, but documentary evidence is not the only kind (the authors, of course, are well aware of other kinds); what they mean by "purely accidental" evidence is unclear. At any rate, there is no doubt that by 395 C.E. (when the Roman Empire came to an end) Jews were living in many European parts of it. Indeed, there were Jews in Europe even before the Roman Empire was established (in 27 B.C.E.), as we know, for example, from the fact that some

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Jews "were expelled from Rome as early as 139 B.C." (Swain and Armstrong 1959: 434). However, one should not go so far as to say that "Rome was apparently a focus from which Jews settled the rest of the Empire, reaching as far north as Cologne" (p. 395). Even if we restrict "the Empire" to 'European parts of the Empire', there is no reason why the Land of Israel, North Africa, and other places could not have been starting points for Jewish settlement of European parts of the Empire outside Rome (and they probably were).

3. Jewish Sutlers in Cologne Irrelevant

The authors write that "the earliest known concentrations in Europe north of the Pyrenees (it seems generally to be assumed that the community in Spain did not interact in significant ways with the developing Ashkenazic community) were in the Rhine valley, in modern France and Germany" (p. 395). It is not clear whether they intend "in modern France and Germany" to modify "in the Rhine valley" (i.e., 'in that part of the Rhine Valley which now belongs to France and Germany'), which seems the likelier explanation in view of the immediately following mention of Mainz, Troyes, and Speyer (all in this area) or, rather, whether each of these three geographic terms is to be taken separately. If the former interpretation is correct, much speaks to the contrary. For example, at least twenty Jewish communities were in existence in what is now France (excluding the Rhine Valley), by the sixth century C.E., e.g., in Marseilles, Narbonne, Orléans, Arles, and Paris (most of them in what is now southern France). Indeed, it is precisely the historiography of Jewish settlements of what is now France which in the last thirty years or so has been undergoing radical revisions as hitherto unknown or hardly known Jewish communities (of various sizes) have been discovered. Rouen, which the authors mention later, is only one of them.

It would be unfair to ask for an exact definition of "significant ways", hence make an issue out of the relationship or lack of it between Jews in Spain and those in the developing Ashkenazic community at the time, but it is worthwhile to note that by the turn of the millennium there may have been a reasonably well connected network of Jewish communities from the Pyrenees northwards towards the Moselle and Rhine Valleys. The emerging Ashkenazim may thus not have been as isolated as one might think. They probably did not have direct

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links with Jews in Spain, but they may have with Jewish communities in what is now southern France, which did. Cf. above on the ever increasing number of points being added to the Jewish map of France.

"Early Jewish settlement in Cologne is known only because of letters to the Jewish leaders from the Emperor Constantine" write the authors (p. 395). *Jewish leaders* suggests a Jewish community, but is there any evidence that the Jews mentioned as being in Cologne in 321 and 331 C.E. were anything but individual male sutlers who had accompanied the Roman legions there? Evidence is lacking of any Jewish families in Cologne at the time or of anything that one could call a Jewish community (Gold 1985a). When the Roman soldiers withdrew from Cologne under attack from their enemies, the sutlers presumably left with them, hence their stay was not only unorganized (from the Jewish viewpoint) but also temporary and with no effect on Jewish families who later came into this areas to settle (several hundred years later). I am unconvinced by the claim of Marchand (1965) that Jewish settlement in Germany was unbroken between the fifth and ninth centuries.

It is therefore also highly doubtful that any Roman encampments in the Balkans "were . . . accompanied by Jewish settlements" (p. 395). In this connection, incidentally, attention should be called to Gičev 1964 for whatever relevance which the find he describes may have. In general, it should be remembered that traditional Jews need the framework of an organized Jewish community and the services it provides (a synagog, ritual bath, cemetery, etc.) in order to obey the precepts of Judaism. Roman encampments could hardly provide these amenities.

4. The Reconstruction of Proto-Yiddish

In their discussion of Proto-Yiddish and its reconstruction, the authors omit one important variety of the language and mention one irrelevant one: the former is Western Yiddish and the latter is Modern Standard Yiddish (called *Standard Yiddish* by the authors and below for short). The omission is merely an oversight, since King recognizes Western Yiddish and its importance for the history of Yiddish (Gold 1984a: 120-121). Standard Yiddish is irrelevant because it is a cultivated rather than a "natural" variety of the language. No great harm has been done, however, in referring to this variety, since all of its

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features are present in one or more "natural" varieties too (as will be shown presently). More important are the following points: [1] aside from the stressed vowels of Yiddish, hardly any reconstruction has been carried out for this language; and [2] Proto-Yiddish is not necessarily identical with Earliest Yiddish. Indeed, the authors once put *Proto-Yiddish* in double quotation marks (p. 396), perhaps to call attention to its status as a reconstruction (see the cautionary remarks in Herzog 1978: 49-50).

Thus, even if we had as complete a reconstruction of Proto-Yiddish as possible on the basis of available evidence (= today's spoken Yiddish and whatever could be gleaned from written evidence of earlier Yiddish), we may still not be able to recover (or recover fully) the Yiddish of its earliest users. At least one reason why Earliest Yiddish may not be fully recoverable is that later influences on the language may have erased most of its earliest features. Therefore, although it is true that the German component of *today's* Yiddish most closely resembles East Central and Bavarian German (p. 397), this may not necessarily have been the case if we could recover the German component of Earliest Yiddish. Significantly, both the reconstruction of the stressed Proto-Yiddish vocalism (carried out by Max Weinreich) and the authors' list of eleven Yiddish features pertain to the modern language as we know it today.

The authors take the absence of Alemannic-origin items in today's Yiddish to be evidence against the GAE (p. 397). Since they cite Bin-Nun 1973, they owe it to the supporters of the GAE to disprove those passages in his book explaining why the German component of today's Yiddish is mostly of Bavarian and East Central German origin. He does not prove the GAE, but it at least shows that this explanation is not disproven by the etymological origins of *today's* German component. Furthermore, since Bin-Nun says that even today's Yiddish has features of Alemannic origin (given elsewhere in his book), it is up to the authors to explain them (this is not incumbent on supporters of the GAE, since it does account for them). The authors state categorically that today's Yiddish has no Alemannic-origin features (p. 397). Who is right?

5. Yiddish as a "German Dialect"

When the authors say that "Yiddish is, at bottom, a German dialect" (p. 396), they are not, of course, making a value

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judgement; all they mean is that the largest component of present-day Yiddish (the German component) is of German origin. A like interpretation should be given to "Yiddish comes from a dialect of the German east" (p. 394).

The authors give eleven features of today's Yiddish which they say are of East Central German or Bavarian German origin (pp. 397-398). Before commenting on them, I would like to say the obvious: eleven features are a drop in the bucket. This is not to denigrate the authors' work, but merely to call attention to the need for larger comparisons. The German component of Yiddish, in all its spatial and chronological diversity, is such a vast field that one researcher could spend an entire lifetime just on tracing its origins. It is true that the authors can adduce earlier research (p. 397, ft. 4) to bolster their statement that the present-day German component of Yiddish is of East Central and Bavarian German origin (I would say: mostly) and that they came to this conclusion after examining far more than eleven features, but let us by the same token try to make nuanced statements.

It has been noted above that Standard Yiddish should not be considered in the reconstruction of Proto-Yiddish. This having been said, we can now look at some of the eleven features:

Features with East Central German analogs:

1. Universal in today's Yiddish.
2. Universal in today's Yiddish.
3. Less than universal. *Ba-* and *ge-* are also rendered with less than full vowels in certain varieties (for *ge-* this appears to be the norm). *Gehat* 'had', in fact, can become /gat/, an inflected form of which has been misinterpreted by a Yiddishly naive dissertationist as German *Gatte* 'husband' (Gold 1973: 24).

Features with Bavarian German analogs:

2. Loss of word-final devoicing is the exception rather than the rule in Yiddish. That Standard Yiddish does not have word-final devoicing is merely a result of its following Northeastern Yiddish (a minority dialect) or of its adopting a spelling pronunciation (for pedagogical ease).

5. *Ets, enk,* and *enker* are found throughout all of Central Yiddish. Imperatives like *hots* and *gits* in parts of Southeastern Yiddish point to the earlier presence of these pronouns in at least some varieties of SEY. They are also found in some Western Yiddish varieties; and Max Weinreich once told me that they were used in earlier Vilnius Yiddish (I do not know the

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specific evidence; Vilnius Yiddish is a variety of Northeastern Yiddish). This geographical configuration (vitality in Central Yiddish and parts of Western Yiddish; former presence in SEY and NEY) points to the once greater use of these pronouns.

6. Lack of umlaut in the present tense of verb forms is universal in today's Eastern Yiddish (and Western Yiddish as well?). In this connection see Query 870 in *Jewish Language Review* 2 (1982): 221 and Query 1227 on p. 248 of the same volume.

7. Western Yiddish too has phonemic vowel length.

Before commenting on feature 8 (p. 398), I would like to raise two theoretical questions. It has already been noted that the authors are using today's Yiddish in their comparison with German and have thus overlooked the possibility that older varieties of Yiddish might lead them to different conclusions. Since the German component of Yiddish goes back to the Middle Ages (about a thousand years according to the GAE), the second term of their comparison should, like the first one, be the appropriate chronolect, namely, Middle High German.

Here is an example of how comparison of modern varieties may be misleading: let us assume that German *ëz*, *ënk*, and *ënker* (cf. feature 5 of the Bavarian ones, p. 398) was once widespread but eventually died out except in Bavarian German. A comparison of today's varieties would naturally lead the authors (as it indeed has) to attribute Yiddish *ets*, etc. to Bavarian influence. Were not these pronouns more widespread in the Middle Ages than Bavarian German? If so, the authors have compared tips of icebergs rather than their bases.

One must also be on the lookout for convergence, that is, forces working independently in two or more languages which lead to identical results (the authors are aware of this in another context: cf. their mention of "inference from coincidence" on p. 422). This could not be the case with respect to *ets*, etc., but it could apply to the next feature, the absence of umlaut in certain forms (both Yiddish and Bavarian German could have lost umlaut independently of one another). Note, for example, the tendency of Yiddish and English to lower /e/ to /a/ before /r/ (and in Yiddish before /x/ too): Yiddish *kharpe* 'disgrace' (cf. Heb. *cherpa*) and English *parson* (from *person*) [many more examples can be cited; see Query 300 in *Jewish Language Review* 2 (1982): 186 and the replies thereto). This raising

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operates in each language independently of the other.

Thirdly, there exists the possibility of alternate influences: is the lack of phonemic vowel length in certain varieties of Eastern Yiddish due to Bavarian German influence (as the authors think, p. 398) or is it due to Slavic influence (as explained in U. Weinreich 1964). Or was it triggered by Bavarian German influence but not developed fully until Yiddish-speakers reached Slavic territory? This possibility will be illustrated forthwith.

The authors attribute the two-tier diminutive system of Yiddish to Bavarian influence (feature 8, p. 398). Since this system is well developed in Eastern Yiddish but only sporadic in Western Yiddish (Zuckerman 1969: 56 calls it "not well established" in Alsatian Yiddish), we cannot rule out the strong possibility of Slavic influence on Eastern Yiddish. If Bavarian German is to be considered as a possible source of the Yiddish phenomenon, it cannot be the only source: Slavic and Alsatian German are relevant where applicable. See also Bin-Nun 1973: 81, where *-l* is called Bavarian and *-ele* "das allgemeiner oberdeutsche, namentlich alemannische."

Five of the eleven features are thus less than universal in Yiddish, hence we are also obliged to explain why not all varieties of Yiddish have them. In a word, the authors' list of eleven analogs (this is a neutral word since it says nothing about origin) raises more questions than it answers.

6. Yiddish and Archistratal Hebrew-Aramic

The authors write that "in a certain sense, it is impossible to find a clear demarcation between Yiddish and Hebrew in Europe in early times" (p. 399). This is true of any archistratal language and its satellite language (often of any two languages in contact) and continues to be true today too: the Yiddish of traditionally learned Jews (Yid. *talmide-khakhomim*), especially when the topic is a Jewish religious one, may be so full of Hebrew-Aramic-origin items that at times it is hard to consider it Yiddish and not Hebrew-Aramic (the easiest access to which outsiders can have to this type of Yiddish is through the radio and television stations which broadcast the discourses of the Libavitsher Rebe; see Query 232 in *Jewish Language Review* 1 [1981]: 168).

Because Hebrew-Aramic has played more than a liturgical role among Ashkenazim, the term *archistratal Hebrew-Aramic*

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is preferable. I share the authors' interest in looking "for phenomena in Ashkenazic liturgical Hebrew that betray the influence of various European languages" (p. 399) and in their implications (ibid.), but want to refer, as I am certain they do as well, to all relevant material. Prominent in an evaluation of the GAE is a thorough study of the Zarphatic-Italkian component of Yiddish (in order not to prejudge the question, we should not call it the "Zarphatic-Italkian substratum"). The authors are aware of it ("a small handful of very old words from Romance", p. 396) but do not discuss it. "Romance" is too broad a glottonym, since the words in question can all easily be attributed to Zarphatic or Italkian.

Secondly, as we go back in time, the Zarphatic-Italkian component of Yiddish gets larger (no other component of the language shows this change). Vocabulary obsolescence can be due to any one of a number of factors. Terms relating to feudalism, for example, will naturally obsolesce as feudalism does. However, the words making up the Zarphatic-Italkian component have nothing in common other than their origin (phonologically, grammatically, and semantically they share nothing). To explain the reduction in their number, therefore, we should look to the only feature they share with one another. From this perspective, I posit that as Yiddish moved farther and farther away from Zarphatic and Italkian (the former language eventually became extinct; the latter language has continued to our day, but after a certain time Italkian-speakers stopped joining Ashkenazic communities in significant numbers), there was less and less reinforcement for their use, hence a number of them were replaced by words belonging to other components. Nonetheless, because some of them are central in Yiddish, they have survived not only to this day but are even retained in successor lects of Yiddish: *bentshn* 'to bless' [approximate translation only] and *leyenen* 'to read' have reflexes in Ashkenazic German (*benschen, leinen*) and Ashkenazic English (*bentsch, leyen*), although with narrowed meanings; one could also mention Ashkenazic German *porschen*, Ashkenazic Dutch *poorsen*, and Jewish English *porge* here, all from Western Yiddish *porshn* (details in Gold 1983a).

One hopes, therefore, that more attention will be devoted to this "small handful of very old words". The most comprehensive treatment so far of this component has been in the works

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of Max Weinreich; the *Jewish Language Review* contains additional information (it may be noted that this component also consists of some non-lexical features).

7. The Old High German Consonant Shift

The authors write that "it is precisely in [the High German – Low German border area, the Franconian dialect area, bordering France] that the textbook account of Jewish migrations . . . claims was the home of the ancestors of Ashkenazic Jews at the time the Old High German shift was taking place" (p. 404), i.e., "around the seventh century C.E." (ibid.). "From the borrowing of the /t/ - /s/ alternational pattern in liturgical Hebrew, we can infer that in the seventh century there were sufficient Jews living in the area affected by the change to bring about the borrowing" (ibid.). Aside from the fact that a double standard seems to be applied here (there are "sufficient Jews" in the Rhine-Moselle area for a borrowing, but not enough [cf. elsewhere in the authors' article] for these Jews to weigh much in the demographic makeup of Ashkenazic Jewry), much has been inferred from little evidence.

The entire argument about undageshed tav becoming /s/ in Yiddish hinges on an unaccounted-for jump from "Biblical" Hebrew to Earlest Ashkenaz. It is prudent to link the two directly? Surely no one will suggest that Jews pronouncing Hebrew as it was pronounced in "Biblical" times settled in Ashkenaz since the spatial and temporal jumps are too great (and the double quotation marks around "Biblical" are intended to emphasize that the Biblical Period covers many centuries, during which time pronunciation of Hebrew was not static; see Gold 1981: 18 on others' dissatisfaction with the label *Biblical Hebrew*). With respect to the letter in question, the pronunication /Θ/ was retained in Yevanic Hebrew and Yevanic (because Greek theta provided a basis for it), yet the jump from Yevanic (the Jewish correlate of Greek) to Earliest Yiddish is still considerable. Can we narrow it further?

Yevanic Jewry was influential in communities speaking Jewish Latin, hence one might want to suppose this pronunciation for the latter too, thence to Zarphatic or early Italkian (it is definitely not found among Italian Jews today), but this is building conjecture upon conjecture, hence unless one can find the missing links, there is no reason to assume that /Θ/ is the phoneme from which Yiddish /s/ (in undageshed tav) must

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be derived. Furthermore, is there any evidence for Jews on German-speaking territory (and in "sufficient" numbers?) in the seventh century C.E. (specifically in the Franconian dialect area)? Marchand 1965, as already noted, seems to be unconvincing. Nor do I understand how the authors' explanation of /s/ from /Θ/, even if correct, leads them to suggest, "albeit not conclusively, that the Jews from the Rhineland were at some point submerged in a numerically larger southern German population" (p. 405). Even if they meant to write "numerically larger Jewish population in southern Germany", I still cannot follow their argument (I hope that the problem is mine).

With respect to Max Weinreich's basing an "inference on the presence of transparent borrowings from Hebrew in the Swabian and Hessian dialects of German" (p. 405), it seems more plausible to assume that Swabian German *yus* 'ten' and Hessian German *yuss* 'ten' and *lames* 'thirty' are of immediate Yiddish, rather than Hebrew, origin (Swabians and Hessians had no direct contact with Hebrew, but they did with Yiddish-speakers). Indeed, since *yus*, at least, has been used in Yiddish to this day (see the entries *ju:s* and *ju:sele* in Weinberg (1969: 69), we have direct evidence, in Yiddish itself, for word-final dalet being pronounced /s/ (for 'thirty' Weinberg gave only *lammed*, p. 74).

8. Vowel System

The section so headed (pp. 405-407) can be improved. The authors write that "the Israeli standard [is] ultimately based on the Sephardic tradition" (p. 406). *Ultimately* is a key word here: early planners of Modern Hebrew took the Sefardic pronunciation of Jerusalem as their model, but since most of the speakers of Modern Hebrew in the Land of Israel during the reintroduction of spoken Hebrew were Ashkenazic Jews (and a majority of these were native Yiddishophones) the model pronunciation became Ashkenazified (Yiddishized) to such an extent that today's General Israeli Hebrew (the de facto prestigious variety) is closest to Standard Eastern Ashkenazic Hebrew pronunciation. The chart on p. 406 shows the same pronunciation (/u/) for kubuts and shuruk in Ashkenazic Hebrew (as in Israeli Hebrew), hence two vowels in the Tiberian system have merged. It is a bit misleading to say that "in modern Israeli Hebrew, as in the Sephardic tradition . . . *kamats* is pronounced sometimes as *pasah* and sometimes as *holam*" (p. 406). Kamats

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katan and kamats gadol are two separate vowels (historically unrelated to each other), which, because of a defect in the Tiberian pointing, are represented by the same sign (thus, the seeming anomaly disappears if this sentence is reformulated as "Kamats katan and cholam have merged, as have kamats gadol and patach, in Israeli Hebrew, but in Ashkenazic Hebrew only kamats gadol and kamats katan have merged").

If indeed there is "persuasive evidence that, prior to the thirteenth century, the same pronunciation of liturgical Hebrew was used north of the Pyrenees as was used in Spain" (p. 406) might this not make the possibility of contact between Iberian and Early Ashkenazic Jews less unlikely (see section 3 above)? The authors give a "simplest explanation" (p. 406) for Yiddish words of Hebrew-Aramic origin having pronunciations unusual from the Tiberian viewpoint (thus, /a/ instead of /o/ in *dag, klal,* etc.). The several explanations offered (including Max Weinreich's) smell of the lamp. Should one not look for purely internal (i.e., phonological) explanations rather than external ones (instances of the latter are the supposed influence of Jewish teachers from Babylonia or the "importation" of the Tiberian vocalization "into the Ashkenazic community sometime after the thirteenth century" [p. 406]). For example, the words *dag, klal, dam, yad, nadn,* and many others all fall into a phonologically defined group: univocalic Yiddish words (syllabic /n/ not counting as a vowel) derived from Hebrew-Aramic (where the etymons may have any one of a number of syllables, e.g., one-syllable *dag*, two-syllable *kelal* and *nadan*, and three-syllable *sefarad* [cf. Yid. *loshn-sfard* 'Spanish', where *sefarad* has been reduced to one syllable]). Surely a purely phonological rule can be formulated to account for /a/ in Yiddish univocalics. Many of these unusual words have been mentioned in the *Jewish Language Review* (on the Yiddish univocalics see *JLR* 5: 477-448).

9. The Authors' Summary

The authors write that they have observed "a discontinuity . . . between the early Hebrew pronunciation of the Rhineland and the later pronunciation used in eastern Europe" (p. 407). Analogous to their finding that present-day Yiddish has no Alemannic-origin features (see, however, Bin-Nun for a different opinion), this conclusion strengthens their conviction that the GAE is faulty. They conclude further that "what we

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find in eastern European Jewry is the result of the merger of two originally distinct communities. While the new community clearly maintained in large measure the cultural and religious traditions of the Rhineland component, it maintained the liturgical pronunciation of the numerically larger southeastern component, the latter having been augmented and influenced by migrants from Babylonia . . . , [hence we see] Yiddish as a Bavarian (southeastern) German dialect with an admixture of East Central (eastern) German" (p. 407). This is in contradistinction to the GAE, which, in the authors' words, posits Rhineland and Moselle Jews as "the demographic core of the eastern European community" (ibid.).

The authors may have exaggerated the differences between their hypothesis and the GAE: [a] the authors recognize the role of Rhineland-Moselle Jewry, [b] the GAE allows for the possibility of pre-existing Jewish communities along the migration routes from the Rhineland-Moselle area to Slavic territory (the authors realize that to prove their point they must show that such communities existed: "positive demographic evidence for this scenario is sparse", p. 407), and [c] where the two explanations diverge, the differences concern wording only. The GAE says that the present-day German component of Yiddish appears to have more in common with latter-day East Central and Bavarian German; whether this was true of the German component of Yiddish in the past remains to be seen. The GAE accepts the artificial restrictions imposed on language classification by the stammbaum approach, that is, just as English must continue to be classified as a Germanic language even though today it is a Germano-Romance language (the stammbaum approach does not allow for double or triple classifications), so too, we suppose, was the German component of Yiddish *originally* closest to Alemmanic and/or Franconian German (that it is not so now is clear to all). In fact, if we lay aside the restrictions of the stammbaum approach and allow for reclassification (or double or triple classification), the GAE can easily accommodate the authors' hypothesis. All they have to do now is show, with a reasonable degree of certainty, the existence of a sizable number of Jews in southeastern Germany at the time of the earliest migrations from the Rhine and Moselle Valleys.

The authors "mean to cast no doubt whatever on the contribution to Ashkenazic culture made by the original Jewish

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settlers in the Rhineland; it is absolutely incontrovertible" (p. 421). However, "if the bulk of Polish Jews trace their ancestry to Jews from the Rhineland, their Yiddish . . . should resemble Rhine Franconian and Alemannic dialects of German rather than Bavarian" (p. 408). The double fallacy in this argument should by now be clear: [1] the GAE says that one strand of Ashkenazic Jewry (not only "Polish Jewry") goes back to the Rhine and Moselle Valleys and [2] the German component of Yiddish changed radically. With respect to [1], many analogies in other languages could be noted (Spanish goes back to Latin as used in Castile, but only a minority of today's Spanish-speakers can trace any ancestry to all back to Castile; only a minority of present-day English-speakers can trace any ancestry back to the Angles, Saxons, and Jutes; etc.). The authors address point [2] as follows:

A problem arises "if we posit a more southerly migration from the Rhineland to Poland, via Bavaria. If a Rhineland Judeo-German (Loez) had developed prior to these assumed migrations, is it likely that *all* traces of the Alemannic or Rhine Franconian components would have been buried by Bavarian? And, if Rhineland Jews spoke the Low Alemannic or Franconian of their Gentile neighbors, why would they have abandoned that in favor of a Bavarian-Hebrew/Aramic fusion language? [This] alternative is contrary to linguistic common sense" (p. 408). Later the authors seem a bit more willing to accept this possibility: ". . . the only reason we can see for systematic replacement of western forms by Bavarian forms is numerical preponderance of speakers of an eastern German dialect" (p. 408). As noted above, others disagree with the authors that present-day Yiddish has no Alemannic-origin features. Secondly, the GAE allows for two explanations of why the German component of Yiddish changed so radically: [a] a large number of Jews on Bavarian and East Central German territory joined the Rhineland-Moselle Jews; [b] there were no Jews (or no significant number of Jews) on Bavarian and East Central German territory when the Rhineland-Moselle Jews came there, but the latter were linguistically influenced by the local non-Jewish population. It is also possible to fuse both possibilities into a third one: [c] the Rhineland-Moselle Jews were influenced linguistically by both Jews and non-Jews on Bavarian and East Central German territory.

As for these explanations supposedly being "contrary to lin-

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guistic common sense", quite the opposite is likely: people the world over (especially children, as will be noted presently) adopt new ways of speaking when moving from one dialect area to another. If Jews have changed languages many times in history they have probably changed dialects even more frequently. Furthermore, we know from general linguistics (and here is where "linguistic common sense" really comes in) that children the world over are likelier to imitate (after infancy) their agemates rather than their elders. This explains why parents all over the world who move from one language area to another or from one dialect area to another (within the same language) tend to retain the language or dialect of their former home much more than their young children do. We all know people whose children either do not speak their parents' language at all (cf., e.g., many immigrant groups in the United States) or who do not speak their parents' dialect at all (cf., e.g., British English-speakers transplanted to the United States).

10. Additional Roots of Ashkenazic Jewry

The authors discuss "alternative sources" which have been suggested for "Polish Jewry" (p. 410). All of the first seven explanations (pp. 410-411) should apply, not to Ashkenazic Jews, but to Knaanic Jews (see section 1 above on immediate vs. non-immediate origin). I prefer *additional* to "alternate" since it is obvious that Ashkenazic Jewry has several roots. Scythian migration seems unlikely (how can it be verified?), though a single datum might provide a shred of possible indirect support for it.

Ashkenaz appears twice in the Jewish Scriptures: in Genesis 10:3 it is an anthroponym (Ashkenaz is the son of Gomer), which does not tell us anything in particular, and in Jeremiah 51:27 it is a toponym, mentioned together with Armenian toponyms (Ararat and Minni). Either one could posit an Armenian origin for Ashkenazic Jewry (this would mean either that Ashkenazic Jews came from Armenia or that they are of Armenian descent), which I do not want to suggest, or one could posit that this Biblical placename, which did not refer to Germany or the Ashkenazic Jews (there were none, of course, in Biblical times), came to designate (in Medieval Hebrew) Germany and Ashkenazic Jews, whatever its earlier (and unrelated) meaning may have been. I do want to suggest the latter and now present two explanations (without supporting either one):

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One explanation is that Jews used Biblical words cryptically in Medieval Europe to designate the areas they were living in so that non-Jews would not understand. These names, the explanation goes on to say, were chosen merely on the basis of phonological similarity: thus *Sefarad* (Obadiah 1:20) came to designate the Iberian Peninsula or Spain because it was similar to Latin *Hispania*; *Togarma* (Genesis 10:3) for Turkey; *Hagar* (Genesis 61:1) for Hungary; and *Ashkenaz* originally for Saxony (cf. its German name, *Sachsen*), later, by extension, all of Germany. This leaves as unexplained *Tsarefat* (Obadiah 1:20), which in Medieval Hebrew came to designate what is now more or less northern France, i.e., modern France less Occitania.

The other explanation, which is relevant to the Scythian hypothesis, is that *Ashkenaz* is to be taken in its probable etymological sense of 'Scythia' (cf. Akkadian *Ishkuzai*, whence Greek *Skythoi* 'Scythians'), hence Ashkenazic Jews (or at least part of them) do indeed descend from Jews who came from Scythia (or from Scythians converted to Judaism?). I present this explanation without taking a stand on it, but will merely add that at least in one case Jews have applied a Biblical name: *Yavan* (Genesis 10:2, Isaiah 66:10, Ezekiel 27:13, Daniel 8:21, Ezekiel 27:19; see also Joel 4:6) designates Greece in Hebrew to this day and this meaning is in accord with its etymology: cf. Greek **Iawōnes* 'Ionians' (see also Old Persian *yauna* 'Greece' and Sanskrit *yavana* 'stranger'); references in Gold 1983b: 89.

I agree with the authors that there are compelling reasons for rejecting the Khazar hypothesis (p. 411; and also with the remarks in ft. 13 on p. 412). However, the authors give two linguistic reasons why they do not accept this hypothesis, one of which, that connected with the Karaites, is not acceptable. They write that the Karaites "claim descent from the Khazars" (p. 411) and "it is common sense to assume that the Karaites are in general the only Jewish descendants of the Khazars" (p. 412). In their many disputes with Talmudic (also called Rabbinic or Rabbanite) Jews, the Karaites have tried to distance themselves by claiming not to be descended from Talmudic Jews (but merely to have adopted the Biblical Jewish religion). However, there is no evidence that they are not (or, at least, originally were not) anything more than a breakaway group of Talmudic Jews (the first Karaite, Anan Ben-David, was definitely a Talmudic Jew, until he founded the Karaite movement).

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That the Karaites speak a Turkic language (preferably called *Karaite* or *Karaitic*; see Gold 1985d: 252) is no evidence of their self-proclaimed Turkic ethnic descent, for, as the authors recognize, one must "make a clear distinction between origin of the population of a community and origin of its cultural traditions" (p. 413). Language should be included under *cultural traditions*, hence not only are the origins of the Karaites and the origins of the Karaite language separate questions, but so too are those concerning the origins of Yiddish and of Ashkenazic Jewry. The authors' seemingly innocent words "by extension" in the following quotation, therefore, gloss over a serious fallacy in their thinking: ". . . we have presented linguistic evidence suggesting a southeastern German origin for the Yiddish language, and, by extension, a southeastern German origin for Yiddish speakers, Ashkenazic Jewry" (p. 421).

The authors, following Menges, say that Karaite has "for the most part [replaced Altaic verb-final word order] by Semitic verb-initial or verb-medial orders" p. 412). This syntactic feature of Karaite is a good example of how analogous phenomena can have several possible explanations (see section [5] on the loss of phonemic vowel length in certain varieties of Yiddish and on the two-tiered diminutive system). Was the change in Karaite really due to Semitic influence? To some other non-Altaic influence? To internal change, i.e., independently of any other language? In the absence of further evidence (when and where did the change begin?), we cannot tell. Incidentally, does Menges really claim that Karaite has "for the most part" abandoned Altaic word order? If so, I believe he was in error since it is only in literal translations from Hebrew that non-Altaic word order is followed (Gold 1983c: 261). The authors appear to have misinterpreted Menges with respect to Karaite vowel harmony: "this is the only Turkic language that has lost the pan-Altaic feature of vowel harmony" (p. 142) they say. Menges actually wrote of the "partial dissolution of the sound harmony, by no means amounting to the complete dissolution brought about by Iranization [in other Turkic languages]" (quoted from Menges on p. 261 of Gold 1983c).

11. The Black Death

It is probably impossible to determine how many Jews died from the Black Plague or whether Jews were more or less

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susceptible to it than non-Jews (see above on the unreliability of statistics). Even contemporary observers did not have the means to make any sort of reliable count beyond their neighborhood or village (or small town). If Chalin de Vinarion wrote in 1382 that Jews and Spaniards are very susceptible to plague because of their "sordid lives" (p. 414), do the authors not see the tendentiousness of this claim? All of these figures, then, are mere guesses; the ones from contemporaries, moreover, were often politically motivated.

12. The Rouen Community

The thrust of the authors' comments under this heading (pp. 414-418) is that the vibrancy of Jewish communities in Normandy and perhaps also in the Ile-de-France until the early fourteenth century "is hard to reconcile with the constant trickle of refugees drifting eastward that is required by the textbook approach" (p. 416). On the contrary, it strengthens the GAE. Let us not forget that medieval towns were surrounded by walls, beyond which people did not want to leave for fear of attack. Within the towns, Jews were often required or wanted to live only in certain neighborhoods. On both Jews and non-Jews alike there were often restrictions pertaining to the height of buildings. A "vibrant" community is going to have a high birth rate and the results are obvious: lack of living quarters will force certain people to leave and settle elsewhere. To be objective, then, let us speak of *migrants* rather than "refugees".

The authors write that "the population base in western Europe simply was not large enough to provide a source for eastern European Jews" (p. 417). Had they written *the source*, one would readily agree, but I do not see that the Rhineland-Moselle Jews were not *a* source (which the authors recognize too). The authors constantly (and rightly) raise the problem of lack of sufficient evidence for this or that aspect of the GAE. Yet it applies with even greater force to what they think is an alternative explanation (I would say: complementary or supplementary explanation), and thus they are obliged to write "we have little hard evidence for early Jewish settlement in southeastern Europe" (p. 417).

One must discount as irrelevant the twelth-century "hearsay reports of non-observant Jews living somewhere in the wilds of Wallachia" (p. 417). Even if there were such people, they must

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have eventually assimilated to the much larger non-Jewish brigand population and thus lost whatever vestiges of Judaism they may have once had. Yes, "this lack of cultural remains is not, by itself, evidence against an early Jewish population concentration in southeastern Germany/Austria/Bohemia" (p. 418), but neither does it speak in its favor. The authors, I fear, have exchanged an explanation difficult to prove for one which is impossible to prove.

They note that "Blumenkranz reports that, as late as 1433, some Hungarian Jews used French as their primary language" (p. 415). By "French" (and "Judeo-French") we should understand Zarphatic. This datum from 1433 (which has been known for some time; see M. Weinreich 1973: 107) does not seem to support or contradict either the GAE or the authors' explanation. Let us assume that these Jews descended from those expelled from French-speaking territory in 1306. Because it is unlikely that the expelled Jews would go directly from what is now northern France to Hungary, we assume that they joined the nearest Jewish communities outside France that could accept them. Their descendants, presumably, continued migrating (for whatever reasons), until reaching Hungary (127 years is a reasonable amount of time for migration from France to eventual settlement in Hungary). However, this migration (1306-1433) is too late to be relevant to the authors' discussion of the early Rhineland-Moselle migration to Slavic territory, hence the datum speaks neither for or against the GAE or their hypothesis. Let us move the migration back to before 1306: again one assumes that the migrants did not head straight for Hungary but that migration was in stages, from the Rhineland-Moselle area towards Hungary. This is precisely the southerly route which the GAE allows for.

13. Two Suggestions for Research

It is easy to forget today just how hard it was for Jews in Medieval Europe to earn their daily bread. Restricted by non-Jews to a certain number of occupations and professions, not permitted to own land, Jews often had to seek a livelihood in places other than their birthplace. It might be profitable, therefore, to try to determine whether there was something about the Duchies of Upper Lorraine, Lower Lorraine, and West Franconia (which included the Rhine Valley between Cologne and Speyer, and the adjacent part of the Moselle Valley) which

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might have attracted Jews in significant numbers in the ninth, tenth, or eleventh centuries. Thus, besides examining the many Jewish aspects of the GAE, we should also look at non-Jewish political, social, and economic conditions in the three duchies.

Secondly, the "very old" Zarphatic- and Italkian-origin words in Yiddish (including those now obsolete) should be examined in as much detail as possible. How many belong to what the GAE posits as the substratum of Yiddish? How many entered Yiddish later? How many entered Yiddish more than once? How many are of Zarphatic origin? Of Italkian origin? Of both origins? Do they tell us anything about Zarphatic and Italkian? There now being more Zarphatic- than Italkian-origin words in Yiddish, if we assume (justifiedly?) that this was true centuries ago, it stands to reason that more Zarphatic- than Italkian-speakers became Yiddish-speakers.

The Bavarian explanation favored by the authors requires them not only to prove the existence of such Jewish communities but also to explain whence these Jews came. It is most unlikely that many (if any) Jews made the difficult journey from Italy over the Tyrolean Alps into Bavaria. If the last sentence of the previous paragraph is correct, a significant Italian origin for the supposed Bavarian Jews would be unlikely for an additional reason. Indeed, if this sentence is true, it tells us to look to areas closer to Zarphatic-speaking territory for the genesis of Ashkenazic Jewry and Yiddish, namely to the Rhine and Moselle Valleys. No one, it is to be hoped, would be rash enough to suggest that the authors' Bavarian hypothesis should make us look to Balkan Romance (Dalmatian and Rumanian) as the source of these "very old Romance words" in Yiddish. Rhaeto-Romanic would be just as fruitless a pursuit.

The authors write that "Barbara Kirshenblatt-Gimblett has tentatively determined that the locus of origin for Torah face-plates as early as the tenth century CE was Bavaria" (p. 419). Quite possible, but we would of course want to see her entire investigation. Even so, this would not mean that the Tora face-plate (Yid. *tas*) necessarily originated then and there or even that Ashkenazim first began using them in tenth-century Bavaria, since earlier ones (possibly from other places) may not have survived. What we do have here, however, is evidence for a center of Jewish craftsmanship, hence for a flourishing Jewish community. This strengthens both the authors' hypothesis of Jewish communities in Bavaria, but it does not weaken

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the GAE, which allows for the possibility of such communities along the migration routes from the Rhineland-Moselle area to Slavic territory.

14. Genetics

The authors mention "intermarriage between Ashkenazic Jews and Sephardic Jews who settled in eastern Europe after the expulsion from Spain in 1492" (p. 421). Even if to these expelees we add those forced to leave Portugal in 1498 and those who left the Iberian Peninsula both before and after the 1490s (it is popularly believed that Jews began leaving Spain in 1492 and that all left in that year, but this is not true), there does not seem to be evidence for any large number of Sefardic Jews who became Ashkenazim in the area under discussion (see *Jewish Language Review* 5 [1985]: 425 for a preliminary bibliography), though one phenomenon which may speak in favor of a larger number than historians have thought is the claim which I have heard many times from Ashkenazic Jews that "in my family there is a tradition of Sefardic descent." By the twentieth century, it is statistically almost impossible that any family which has been Ashkenazic for any length of time (say two hundred years) could be purely of Sefardic ancestry, hence what this means is "among our ancestors were a number of Sefardic Jews." For many years I dismissed these claims as lay fantasy, presumably generated by the aura surrounding the so-called "Golden Age" of Sefardic Jewry (Max Weinreich quietly exploded that myth) and the Sefardic myth that "Sefardic Jews are the crème de la crème of world Jewry" (as some of them like to put it in English: bearers of "our noble Sefardic culture"). However, when I heard the claim in my own family and, upon investigation, found it to be likely, I realized that the number of Sefardic ancestors of certain Ashkenazim must be greater than I had thought.

To the discussion of genetic mutations found exclusively or almost so among Jews (pp. 419-420) can be added the information in *Jewish Language Review* 4 [1984]: 292-293.

15. Conclusion

The authors write that they "found no evidence supporting the accepted, textbook accounts. Nor did we find much evidence supporting our [own] claim . . . . But there was much more evidence against the textbook theory than there was

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against our hypothesis" (p. 421). I feel that the authors, while asking important questions, have shown no reason why the GAE should be abandoned. Their hypothesis, of Bavarian Jewish communities, complements, but does not contradict, the GAE. All of us, however, can at least agree in regretting that Max Weinreich (1894-1969), who towered over all of us in the study of Yiddish and Ashkenazic Jewry, cannot participate in this stimulating discussion.

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BOOK REVIEWS

FRONTIER EXPANSION IN AMAZONIA
Edited by Marianne Schmink and Charles H. Wood, University of Florida Press, 1984

An exciting fact-filled book dealing with the ecological rape of the Amazon Valley as a result of the population explosion in the Latin American countries. reinforced by modern technological innovations. The authors focus on ecological damage and, more particularly, upon the destruction of the aboriginal Indian societies, which are so poorly protected by the respective governments.

Papers discuss the colonization and uncontrolled expansion of the hitherto coastal Brazilian population, largely descended from Portuguese African slaves and mestizoes, and also of the Bolivian, Venezuelan and Ecuadoran populations, into one of the world's last remaining treasure lands of tropical vegetation. Overcropping and overgrazing are discussed, as well as the clearance of rain forests. This is a valuable publication, well put together, which deals with a matter of vital importance for the future of mankind.

EARLY HAWKESBURY SETTLERS
By B. Hardy, Kangaroo Press, Australia, 1985

This is a truly attractive publication, which comprises a case study of the settlement of an Australian township, tracing the early settlers to their home towns in the British Isles. The text is well written, and remarkably comprehensive. It covers almost every aspect which could be of scholarly interest, ranging from people themselves to the ecological problems which they encountered in their new homeland. Their responses to these problems resulted in the innovative application of their traditional culture and skills. This is a volume which can be read by scholars and laymen alike, written by one who clearly loved his subject.

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HUMAN COMFORT
By Keith Slater, Charles C. Thomas, Publisher, Springfield, Illinois, 1985

This text introduces and broadly surveys human comfort, which the author calls "the most important subject in the world." In an entertaining manner, the author defines comfort, shows why he regards it as important, and analyzes its effects on the individual. He explains physiological, physical and psychological considerations; indicates how certain elements of human comfort can be measured; and reveals the influence of comfort in many areas of daily life – in the home, at work, and while traveling. The role of textiles receives special attention, especially as they relate to the individual and the environment. The final chapter suggests ways in which readers can raise their own comfort level merely by attending to the variables over which they have a degree of control.

THE VILLAGE AND HOUSE IN THE MIDDLE AGES
By Jean Chapelot and Robert Fossier, University of California Press, Berkeley, 1985

The development of the village and of the house as a family unit underlies the whole of Western history. This book traces the evolution of the settled landscape, with illustrated examples from archaeological sites throughout Europe.

As the house developed – from its early simple form to a multiroomed, multipurpose unit – so the building materials and techniques involved increased in sophistication. This clear account of the evolution of medieval rural architecture, beautifully illustrated and with ample documentary evidence, is an invaluable contribution to the study of the history of Western civilization.

BAHREIN THROUGH THE AGES: THE ARCHAEOLOGY
Edited by Shaikha Haya Ali Al Khalifa and Michael Rice
Routledge and Kegan Paul, 1986

A most attractively produced and informative summary of the prehistory of Bahrein. Bahrein has for long been a human settlement of considerable importance, due to its adequate sup-

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ply of good water. References to it appear in Mesopotamian and Greek literature, but its legendary desirability is now shown to be but an echo of reality. Plentiful traces are to be found in the literally hundreds of thousands of burial mounds, in three successive temples at Barbar and in Dilmun, of generations of occupants who lived in relative comfort through the millennia.

ANIMAL MYTHS AND METAPHORS IN SOUTH AMERICA
Edited by Gary-Urton, University of Utah Press, Salt Lake City, 1985

What similarities and differences do humans see between themselves and animals? Why do people commonly make metaphorical comparisons between human beings or social groups and animals? And to what degree are people's attitudes and beliefs about animals parallel to or contingent upon their attitudes and beliefs about human beings and human society? This collection considers issues basic to any study of "totemism".

The contributors to this anthology have not limited themselves to the notion that clans and moieties are the objects of metaphorical comparisons between humans and animals. They suggest a shift in perspective that has metaphorical comparisons generated by conceived similarities and differences between animals and particular types of human beings. With this shift of emphasis, a significantly different analytic focus in the study of human-animal relations is produced.

WIDOWS IN AFRICAN SOCIETIES: Choices and Constraints
Edited by B. Potash, Stanford University Press, 1986

Although widows constitute a quarter of the female population in many African societies, they receive very little attention in government or academic discussion. While traditional forms of kinship responsibility are supposed to provide for their care, a close examination of current African reality reveals that brothers of the widow, or of her deceased husband, do not play such a prominent role in their care as has been previously assumed. Earlier anthropological studies identified remarriage as being the recognized source of subsistence for widows in most African societies, but the consensus of the studies contained in this work would rather suggest that the main guarantee for the well-being of a widow in present-day Africa is the affection of her children.

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